THE CHINESE TRAVELLER.

CONTAINING

A GEOGRAPHICAL, COMMERCIAL, and POLITICAL

HISTORY of CHINA.

WITH

A particular ACCOUNT of their

CUSTOMS,	SCIENCES,	MANUFACTURES,
MANNERS,	CEREMONIES,	SHIPPING,
RELIGION,	BUILDINGS,	PLANTS,
AGRICULTURE,	LANGUAGE,	TREES,
GOVERNMENT,	PHYSICK,	BEASTS,
ARTS,	TRADE,	BIRDS, &c. &c.

TO WHICH IS PREFIXED

THE LIFE OF CONFUCIUS,

The celebrated CHINESE PHILOSOPHER.

COLLECTED FROM DU HALDE, LE COMPTE, AND OTHER MODERN TRAVELLERS.

VOL. II.

ADORNED WITH A MAP OF CHINA, AND OTHER CURIOUS COPPERPLATES.

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THE CHINESE TRAVELLER.

Of the SKILL *of the* CHINESE *in the* SCIENCES.

WHEN we behold the immenſe number of libraries in China elegantly built, beautifully adorned, and furniſhed with a valuable collection of books; when we conſider the prodigious number of doctors, and colleges eſtabliſhed in every city throughout the empire, their obſervatories, and their ſteady attention to the motion of the ſtars; and when we further recollect, that men are never preferred but in proportion to their abilities, that the moſt exalted dignities are acquired by ſtudy alone; that according to the laws of the empire, none have been governours of cities and provinces, and have enjoyed all the offices about the court, but the learned, for upwards of four thouſand years; one would be tempted to imagine, that every nation in the univerſe muſt be extremely ignorant, in compariſon of that of China.

Notwithſtanding all this, a long acquaintance with

them is not neceſſary to undeceive you; for though it muſt be owned that the Chineſe have a great deal of wit, yet it is not very penetrating, inventive, and ſearching, nor have any of the ſpeculative ſciences, which require ſubtilty and penetration, been brought to any perfection amongſt them.

Yet I would not willingly find fault with their genius, ſince it is evident that they have performed other things which require as extenſive a capacity, and as deep a penetration as the ſpeculative ſciences: but their progreſs in theſe kind of ſciences has two very great obſtacles; firſt, there is nothing within or without the empire to excite their emulation: and ſecondly, thoſe who are able to diſtinguiſh themſelves can have nothing to expect as a reward for their performance.

Their principal method of obtaining riches, honours, and offices, is the ſtudy of the laws, morality, the canonical books, and hiſtory; it is to learn to write in a polite manner, in terms ſuitable to the ſubject treated upon; by this means they obtain the degree of doctor; and when that is over they are poſſeſſed of ſuch honour and credit, that the conveniencies of life ſoon after follow, becauſe they are certain of being preſently in poſſeſſion of a government: even thoſe who wait for this poſt, when they return into their provinces, are very much reſpected by the Mandarine of the place, their family is protected from troubleſome moleſtations, and they there enjoy ſeveral privileges.

But as thoſe who apply themſelves to the ſpeculative ſciences have nothing like this to hope for, and as the ſtudy of them is not the road to honours and wealth, we need not be ſurpriſed that in China theſe ſort of abſtracted ſciences ſhould be ſo much neglected.

Of the CHINESE LOGICK.

LOGICK, which in Europe is much refined, is void of all precepts amongſt the Chineſe; they are ignorant of defining, dividing, and drawing conſequences, and have invented no rules to bring argumentation to perfection; they follow nothing but the natural light of reaſon; it is by this alone, and without the leaſt aſſiſtance from art, that they compare ideas together, and draw juſt enough conſequences.

Of their RHETORICK.

THE Chineſe are entirely ignorant of the proper rules to adorn and embelliſh a diſcourſe, their rhetorick being quite natural; and yet they are not abſolutely without, imitation generally ſerving them inſtead of precepts: they are ſatisfied with reading the moſt eloquent pieces, and obſerve the ſtrokes that are moſt likely to affect the mind, and make ſuch an impreſſion as they deſire; when they compoſe any ſet diſcourſe, they copy theſe models.

Their eloquence does not conſiſt in a proper arrangement of periods, but in lively expreſſions, noble metaphors, bold ſimilies, and principally in ſentences and maxims extracted from the antient ſages, who expreſs themſelves in a lively, conciſe, and myſterious ſtyle, comprehending a variety of thoughts, and much ſenſe in a ſmall number of words.

Of their MUSICK.

WERE one to believe the Chineſe, they were the firſt inventors of muſick, and who formerly brought it to the greateſt perfection. But if what they ſay is true, they muſt be greatly degenerated, for it is at this time ſo imperfect, that it is unworthy of the name.

In former times, it is true, it was in great eſteem, and Confucius himſelf undertook to introduce precepts concerning it in every province, whoſe government he was intruſted with: The Chineſe themſelves ſtill are very ſorry for the loſs of the antient treatiſes upon muſick.

Muſick with them is now ſeldom uſed but at plays, feaſts, weddings, and ſuch-like occaſions: it is made uſe of by the Bonzes at burials, but when they ſing they never raiſe and lower their voice a ſemi-tone, but only a third, a fifth, or an octave, and this harmony is very delightful to the ears of a Chineſe. Beſides, their concerts have no dependance on the variety of tones, nor the difference of parts, they all ſing the air as it is practiſed throughout the other parts of Aſia.

The European muſick pleaſes them vaſtly, provided the ſound of ſeveral inſtruments is accompanied but by one voice: but they look upon the moſt curious part of muſick, viz. the contraſt of different voices, of grave and acute ſounds, diëſes, fugues, and ſyncopes, as a diſagreeable confuſion.

They are ignorant of the muſical notes, and have no ſigns to denote the diverſity of tones, the raiſing or falling of the voice, and the reſt of the variations which conſtitute harmony: the airs which they ſing or play upon their inſtruments are got only by rote, and are learnt by the ear; notwithſtanding which, they fre-

quently compoſe new ones, and the late emperor Cang hi has made ſome himſelf. There is ſomething agreeable even to an European ear in theſe airs played upon their inſtruments, or ſung by a good voice.

The late emperor Cang hi was greatly aſtoniſhed at the eaſe wherewith we retain an air after the firſt hearing by the aſſiſtance of notes. In the year one thouſand ſix hundred and ſeventy-nine, he ſent for F. Grimaldi and F. Pereira to play upon an organ and an harpſicord of which they had formerly made him a preſent; he appeared to be very much delighted with our European airs; then commanded his muſicians to play a Chineſe air upon their inſtruments, and likewiſe played very gracefully himſelf.

While the muſicians were playing, F. Pereira took his pocket book and pricked down all the tune, and after they had finiſhed, repeated it without miſſing one note, which ſurpriſed the emperor ſo much that he could hardly believe it. He extolled the harmony, facility, and juſtneſs of the European muſick; but he admired above all, that the father had ſo ſoon learnt an air which had coſt him and his muſicians ſo much trouble, and that by the aſſiſtance of characters he could recollect it whenever he thought proper.

To be more certain of this he put him to the trial ſeveral times, and ſung a great many different airs, which the father took down in his book, and repeated exactly with the greateſt juſtneſs: I cannot but own, ſaid the emperor, that the European muſick is incomparable; and the equal of father Pereira is not to be found in all the empire. This prince afterwards eſtabliſhed an academy of muſick, and made the moſt ſkilful perſons in that ſcience members of it, and committed it to the care of his third ſon, a man of letters, and well verſed in books. They began by examining

all the authors that had wrote upon the ſubject, they cauſed various inſtruments to be made after the antient manner, and according to the ſize propoſed. The faults of theſe inſtruments were diſcovered and corrected, after which they compoſed a book in four volumes, called, "The true doctrine of Li lu, written by the emperor's command." They afterwards added a fifth volume to theſe four, concerning the elements of European muſick, of which F. Pereira was the author.

The Chineſe have invented eight kinds of muſical inſtruments, which they think to have the neareſt reſemblance of a human voice; ſome are of ſtone, others of metal like our bells, and one among the reſt is not unlike our trumpet.

They have alſo others made of ſkins like our drums, of which there are various ſorts, and ſome are ſo ponderous, that it is neceſſary to ſupport them with a piece of wood before they can be uſed. They likewiſe make uſe of ſtringed inſtruments, but the ſtrings are of ſilk, not gut. Such are the cymbols that the blind people play upon, as alſo their violins, each of which have but three ſtrings.

They are likewiſe very fond of an inſtrument of ſeven ſtrings, which, when ſkilfully played upon, is agreeable enough: they have others that conſiſt of nothing but two large boards of wood, which they knock againſt each other.

Wind-inſtruments are alſo in uſe amongſt them, they having two or three kinds reſembling our flutes, and a ſmall ſpecies of organ, the ſound of which is not diſagreeable.

Of their ARITHMETIC.

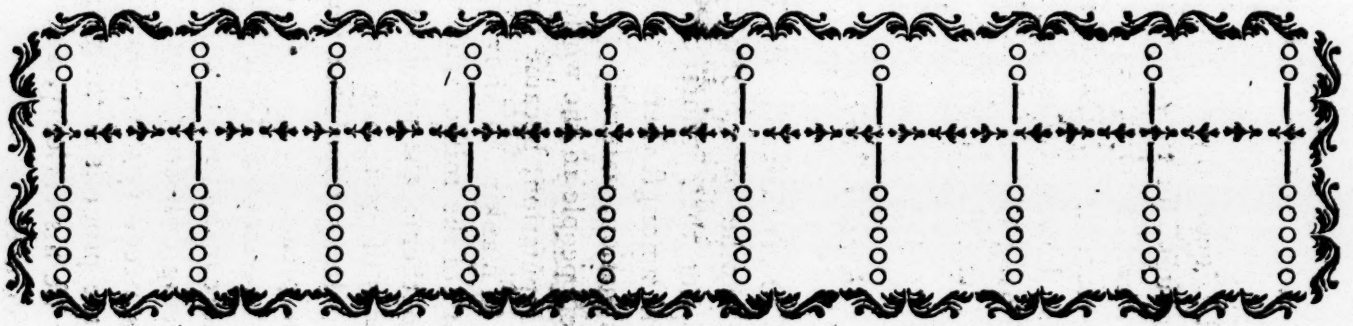
THEY are not ignorant of arithmetic, for the four principal rules, teaching how to add, ſubtract, multiply, and divide, are to be found in their books. But they do not put theſe rules in practice by calculation, for they have nothing like our figures whereby they may perform the operation.

When they caſt up accounts they make uſe of an inſtrument called Souan Pan, which conſiſts of a ſmall board croſſed from the bottom to the top, having ten or twelve parallel rods with a ſeparation in the middle; little ivory balls are put upon theſe rods, which ſlip up and down; the two which are in the upper one ſtand each for five units, and the five below for units.

They reckon much in the ſame manner in joining and ſeparating the balls as we do with counters, but with ſo much facility and quickneſs, that they can keep pace with a man who is reading a book of accompts. The Chineſe can caſt up the moſt conſiderable ſums in leſs time than our Europeans with the uſe of figures.

Souan Pan, or the Inſtrument uſed by the Chineſe in caſting up Accompts.

Pe ouang leang, or Millions or Taels.	Ouan leang, or 10,000 of Taels.	Tſien leang or 1000 Taels.	Pe leang, or 100 Taels.	Che leang, or ten Taels.	Leang, or a Tael, 100 Sous.	Tſien or ten Sous.	Fuen, or a Sou.	Li, or a Denier.	Hao, or the tenth Part of a Denier.



Of their GEOMETRY.

THE geometry of the Chineſe is ſuperficial enough, for they have but little knowledge either in the theory or practice; if they undertake to ſolve any problem, it is rather by induction than by any ſtated rules: however, they are not wanting in exactneſs in meaſuring their land, and in ſettling the extent and bounds; and their method of ſurveying is very ſure and eaſy.

Of the other Parts of the MATHEMATICS.

TWO centuries ago the Chineſe knew nothing of the other parts of the mathematics, and they diſcovered not their ignorance till the miſſionaries then firſt went amongſt them.

This nation, naturally proud, reckoned themſelves the wiſeſt people in the world, and they quietly enjoyed this reputation, becauſe they were acquainted with no part of mankind ſo knowing as themſelves; but the ingenuity of the miſſionaries who appeared at court undeceived them: the proof which they gave of their capacity was of great uſe in authoriſing their miniſtry, and in gaining reſpect for the religion of which they were the preachers.

The late emperor Cang hi, who delighted in nothing more than in acquiring knowledge, was never tired of ſeeing or hearing them: and the Jeſuits, perceiving how neceſſary the protection of this great prince was to the progreſs of the goſpel, omitted nothing that might raiſe his curioſity, and ſatisfy this natural reliſh for the ſciences.

In order to give him an inſight into opticks, they

preſented him with a ſemi-cylinder of a light kind of wood; in the middle of its axis was placed a convex-glaſs, which, being turned towards any object, painted the image within the tube with the utmoſt nicety.

So unuſual a ſight pleaſed the emperor much, and he deſired to have a machine made in his garden at Peking, wherein he might behold every thing that paſſed in the ſtreets and neighbouring places, without being ſeen himſelf.

Obedient to the emperor's command, they procured for this purpoſe an object-glaſs of much greater diameter, and made in the thickeſt garden-wall a large window in the ſhape of a pyramid, the baſis of which was towards the garden, and the point towards the ſtreets: at the point they fixed the glaſs-eye over againſt the place where there was the greateſt concourſe of people; at the baſis was made a large cloſet, ſhut up cloſe on all ſides, and very dark.

The emperor frequently came with his queens to this place, to obſerve the lively images of every thing that paſſed in the ſtreets; and this ſight vaſtly delighted him, but the princeſſes much more, who could not otherwiſe behold this ſpectacle, the cuſtom of China not ſuffering them to ſtir out of the palace.

F. Grimaldi gave another ſurpriſing ſpectacle by his ſkill in opticks in the Jeſuits garden in Peking, which vaſtly amazed the nobles of the empire. They made upon the four walls four human figures, every one being of the ſame length as the wall, which was fifty feet. As he had perfectly obſerved the optick-rules, there was nothing ſeen on the front but foreſts, mountains, chaces, and other natural things; but at a certain point they perceived a well-proportioned and well-made figure of a man.

The emperor honoured the Jeſuits houſe with his preſence, and beheld theſe figures a long time with admiration; the grandees and principal Mandarines, who came in crowds, were equally ſurpriſed; but that which ſtruck them moſt was to ſee the figures ſo regular and ſo exact upon irregular walls, that in ſeveral places had large windows and doors.

It would be too tedious to mention all the figures that ſeemed in confuſion, and yet were ſeen diſtinctly at a certain point, or were put in order with conick, cylindrick, pyramidical mirrors, and the many other wonders in opticks that F. Grimaldi diſcovered to the fineſt genius's in China, and which raiſed their ſurpriſe and wonder.

In catoptricks they preſented the emperor with all ſorts of teleſcopes, as well for aſtronomical obſervations, as for taking great and ſmall diſtances upon the earth; and likewiſe glaſſes for diminiſhing, magnifying and multiplying: among other things they preſented him with a tube made like a priſm, having eight ſides, which, being placed parallel with the horizon, preſented eight different ſcenes, and ſo lively that they might be miſtaken for the objects themſelves; this being joined to the variety of painting entertained the emperor a long time.

They likewiſe preſented another tube whereon was a polygon-glaſs, which by its different faces collected into one image ſeveral parts of different objects, inſomuch that inſtead of a landſkip, woods, flocks, and a hundred other things repreſented in the picture, there was ſeen diſtinctly a human face, or ſome other figure very exact.

There was alſo another machine which contained a lighted lamp, the light of which came through a tube, at the end whereof was a convex-glaſs, near which ſe-

veral ſmall pieces of glaſs painted with divers figures were made to ſlide: theſe figures were ſeen upon the oppoſite wall of a bigneſs in proportion to the diſtance of the wall; this ſpectacle in the night-time, or in a very dark place, frighted thoſe who were ignorant of the artifice, as much as it pleaſed thoſe who were acquainted with it: on this account they have given it the name of the Magick-lanthorn.

Nor was preſpective forgotten, F. Bruglio gave the emperor three draughts wherein the rules were exactly kept; he ſhewed three copies of the ſame in the Jeſuits garden at Peking; the Mandarines, who flock to this city from all parts, came to ſee them out of curioſity, and were all equally ſtruck with the ſight: they could not conceive how it was poſſible on a plain cloth to repreſent halls, galleries, porticoes, roads and alleys that ſeemed to reach as far as the eye could ſee, and all this ſo naturally, that at the firſt ſight they were deceived by it.

Staticks likewiſe had their turn: they offered the emperor a machine, the principal parts of which were only four notched wheels and an iron grapple; with the help of this machine a child raiſed ſeveral thouſand weight without difficulty, and ſtood firm againſt the effort of twenty ſtrong men.

With relation to hydroſtaticks, they made for the emperor pumps, canals, ſyphons, wheels and ſeveral other machines proper to raiſe water above the level of the ſpring; and among others a machine which they made uſe of to raiſe the water out of the river, called The ten thouſand ſprings, and to carry it into the ground belonging to the emperor's demeſns, as he had deſired.

F. Grimaldi made a preſent likewiſe to the emperor of a hydraulick machine of a new invention; there

appeared in it a continual Jet d' Eau, or caſcade, a clock that went very true, the motions of the heavens, and an alarm equally juſt.

The pneumatick machines alſo did not leſs excite the emperor's curioſity: they cauſed a waggon to be made of light wood about two foot long, in the middle of it they placed a braſen veſſel full of live coals, and upon that an Æolipile, the wind of which came through a little pipe upon a ſort of a wheel made like the ſails of a wind-mill; this little wheel turned another with an axle-tree, and by that means ſet the waggon in motion for two hours together: but leſt room ſhould be wanting to proceed conſtantly forward it was contrived to move circularly, in the following manner.

To the axle-tree of the two hind wheels was fixed a ſmall beam, and at the end of this beam another axle-tree, which went through the center of another wheel ſomewhat larger than the reſt; and according as this wheel was nearer or farther from the waggon it deſcribed a greater or leſſer circle.

The ſame contrivance was likewiſe fixed to a little ſhip with four wheels; the Æolipile was hid in the middle of the ſhip, and the wind proceeding out of two ſmall pipes filled the little ſails, and made it wheel about a long while; the artifice being concealed there was nothing heard but a noiſe like a blaſt of wind, or like that which water makes about a veſſel.

I have already ſpoken of the organ which was preſented to the emperor, but as this was defective in many things F. Pereira made a larger, and placed it in the Jeſuits church at Peking: the novelty of this harmony charmed the Chineſe, but that which aſtoniſhed them moſt was that this organ played of itſelf Chineſe as well as European airs, and ſometimes both together.

It is well known, as I have elſewhere mentioned,

that what gave F. Ricci a favourable admiſſion into the emperor's court was a clock and a ſtriking watch of which he made him a preſent; this prince was ſo much charmed with it that he built a magnificent tower purpoſely to place it in, and becauſe the queen-mother had a deſire for a ſtriking-watch the emperor had recourſe to a ſtratagem to diſappoint her, by ordering the watch to be ſhewn her without taking any notice of the ſtriking part, ſo that ſhe not finding it according to her fancy ſent it back.

They did not fail afterwards to comply with the emperor's taſte, for great quantities of curious things were ſent out of Europe by Chriſtian princes, who had the converſion of this great empire at heart, inſomuch that the emperor's cabinet was ſoon filled with rarities, eſpecially clocks of the neweſt invention, and moſt curious workmanſhip.

F. Pereira, who had a ſingular talent for muſic, placed a large and magnificent clock on the top of the Jeſuits' church; he had made a great number of ſmall bells in a muſical proportion, and placed them in a tower appointed for that purpoſe; every hammer was faſtened to an iron wire, which raiſed it, and immediately let it fall upon the bell: Within the tower was a large barrel, upon which Chineſe airs were marked with ſmall ſpikes; immediately before the hour the barrel was diſingaged from the teeth of a wheel, by which it was ſuſpended and ſtopt; it then was inſtantly ſet in motion by a great weight, the ſtring of which was wound about the barrel, the ſpikes raiſed the wires of the hammers, according to the airs of the tune, ſo that by this means the fineſt airs of the country were heard.

This was a diverſion entirely new both for the court and city, and crowds of all ſorts came conſtantly to

hear it; the church, though large, was not ſufficient for the throng that inceſſantly went backward and forward.

There was no extraordinary phænomenon, ſuch as a parhelion, rainbows, &c. appeared in the heavens, but the emperor immediately ſent for the miſſionaries to explain the cauſes of them: They compoſed ſeveral books concerning theſe natural appearances, and to ſupport their explanations in the moſt ſenſible manner they contrived a machine to repreſent the effects of nature in the heavens.

It was a drum made very cloſe and whitened on the inſide; the inward ſurface repreſented the heavens; the light of the ſun entering through a little hole, paſſed through a triangular priſm of glaſs, and fell upon a poliſhed cylinder; from this cylinder it was reflected upon the concavity of the drum, and exactly painted the colour of the rainbow.

From a part of the cylinder, a little flattened, was reflected the image of the ſun; and by other refractions and reflections were ſhewn the Haloes about the ſun and moon, and all the reſt of the phænomena relating to celeſtial colours, according as the priſm was more or leſs inclined towards the cylinder.

They made a preſent likewiſe to the emperor of thermometers to ſhew the ſeveral degrees of heat and cold, to which was added a very nice Hygrometer to diſcover the ſeveral degrees of moiſture and dryneſs: It was a barrel of a large diameter, ſuſpended by a thick ſtring made of cat-gut of a proper length and parallel to the horizon; the leaſt change in the air contracts or relaxes the ſtring, and cauſes the barrel to turn ſometimes to the right, ſometimes to the left, and ſtretches or looſens to the right or left upon the circumference of the barrel a ſmall ſtring, which draws a little pendulum,

and marks the ſeveral degrees of humidity on one, and on the other thoſe of dryneſs.

All theſe different inventions of human wit, till then unknown to the Chineſe, abated ſomething of their natural pride, and taught them not to have too contemptible an opinion of foreigners; nay it ſo far altered their way of thinking, that they began to look upon the Europeans as their maſters.

Of their ASTRONOMY.

WITH reſpect to aſtronomy they always thought themſelves the moſt ſkilful in the world, and it muſt be owned that there is no nation whatever that has applied more conſtantly to it; the Chineſe have made obſervations in all ages, and even in the infancy of the empire; they have always appointed perſons to watch the heavens night and day, inſomuch that it has been at all times one of the principal employments of the learned.

Their attention in examining the courſe of the ſtars is a proof that they have retained a great deal of the manners of the primitive Hebrews, whoſe immediate deſcendants they are ſuppoſed to be, they having peopled China a ſhort time after the deluge.

Their attention to obſervations was looked upon as a thing ſo important, that the laws even puniſhed with death the negligence of thoſe to whom the ſtate had entruſted this employment, which appears from one of their ancient books, entituled, Chu king. Yn, general of the troops of Tchong kang ſpeaks in the following manner.

"It is neceſſary to relate the excellent inſtructions "given us by the grand Yu. According to theſe in- "ſtructions the ancient princes, who firſt ſettled the

"form of government, have been ſucceſsful, becauſe "they were attentive to the will of heaven, and con- "formed themſelves thereto in their conduct, the mi- "niſters that came after them having no other views "but thoſe of virtue: We ſee at preſent Hi and "and Ho plunged in wine and debauchery, paying no "regard to ancient cuſtoms, and being entirely for- "getful of their duty: The firſt day of the moon, "which was at the ſame time the autumnal equinox, "there was an eclipſe of the ſun at eight in the morn- "ing in the conſtellation Fang [Scorpio] and Hi and "Ho pretended they knew nothing at all of it. Our "ancient emperors ſeverely puniſhed thoſe whoſe bu- "ſineſs it was to examine the celeſtial motions, and "did not exactly foretel them: It is written in the laws "handed down to us, that if the time of a celeſtial "phænomenon is not ſet down in the calendar, or is "not foretold, ſuch neglects ought to be puniſhed with "death."

It is eaſy to perceive that theſe princes, which he calls ancient, muſt have lived a long while before Yao and Chun, whoſe cotemporary he was: If theſe ancient emperors made ſuch rigid laws againſt negligent mathematicians we muſt ſuppoſe the empire was pretty well eſtabliſhed: This eclipſe has been verified by ſeveral mathematicians among the Jeſuits, and it was ſuch an one that it could not appear in any other country but China, or places beyond it.

The exactneſs wherewith Confucius has given an account of the eclipſes, is ſufficient to make us regret the loſs of ſeveral things of this kind in the firſt accounts of this nation, whence it would appear how much the Chineſe have always had at heart every thing that might give poſterity a certainty of the exactneſs of their hiſtory.

Of the thirty-ſix eclipſes of the ſun, related by Confucius, there are but two falſe and two doubtful; all the reſt are certain.

Several Europeans, not willing to truſt their accounts, have ſatisfied themſelves of the truth by their own calculations: F. Adam Schaal has calculated and verified the eclipſe of Tchong kang, which happened two thouſand one hundred and fifty five years before Chriſt, and likewiſe calculated ſeveral of Tchun tſiou, which calculations he cauſed to be printed in Chineſe.

The obſervation of the eclipſe of the ſun in the year two thouſand one hundred and fifty five before Chriſt is found in Chu king, as F. Gaubil obſerves, and as the interpreters unanimouſly aſſure us, who wrote an hundred years before the Chriſtian æra.

The eclipſe of ſeven hundred and ſeventy ſix years before Chriſt is in the text of Chi king in the aſtronomy of the Han, and in the text of the hiſtory. The obſervations of Tchun tſiou are in the book, and in the commentaries made by the authors who lived very near the time of Confucius: The greateſt part of theſe eclipſes are alſo in the text of the Chineſe hiſtory.

As for the greateſt part of the other obſervations, they are taken from the texts of the hiſtory made in the time of the dynaſties under which the obſervations were made; they are alſo in the aſtronomy compoſed in the time of theſe dynaſties, and all this is in the great Chineſe hiſtory, called Nien y ſſe.

I am certain of the terms of the Chineſe aſtronomy, continues F. Gaubil, I was well acquainted with the forms of the year, as alſo the cycles, and the Chineſe days; I have found a great many obſervations correſponding with thoſe of Europe and Aſia; I have verified, by calculation, a great number of obſervations,

and by that means I found that they were obſervations in reality, and not calculations made afterwards, at leaſt for the generality; and what more can be required to verify an epocha? Nay, what have thoſe done more who have examined the eclipſes mentioned by Herodotus, Thucydides, Plutarch, Dion? &c.

To theſe teſtimonies, which ſufficiently prove the antiquity of the Chineſe aſtronomy, I ſhall add the remarks of F. Gaubil, who made it his particular ſtudy, and who ſince his arrival in China was deſirous of being well acquainted with the ſkill of the ancient Chineſe in matters of this nature; I ſhall give you his own words in two letters addreſſed to F. Souceit, which are found in the new volume of aſtronomical obſervations publiſhed by this father in the year 1729.

You have the ſtate of the Chineſe heavens, ſays F. Gaubil, made more than an hundred and twenty years before Chriſt; you have the number and extent of their conſtellations, and what ſtars then anſwered the ſolſtices and equinoxes, and this by obſervation; you have alſo the declination of the ſtars, the diſtance of the tropics and the two poles.

The Chineſe were acquainted with the motion of the ſun and moon from weſt to eaſt, and likewiſe of the planets and fixed ſtars, though they did not determine the motion of the latter till four hundred years after Chriſt; they alſo had a knowledge of the ſolar and lunar months, and have given Saturn, Jupiter, Mars, Venus, and Mercury revolutions very near ours; but they have not a thorough knowledge of the rules of retrogradation and the ſtations; yet as well in China as Europe ſome have made the heaven and planets revolve about the earth, and others have ſuppoſed that they move about the ſun; but the number of the lat-

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ter is ſmall, and this opinion is not found unleſs in the writings of ſome particular perſons.

I am not yet very certain, continues P. Gaubil, of the method uſed by the Chineſe in the calculation of eclipſes; but I know that they expreſſed particularly the quality of the eclipſes, the ecliptical bounds, the viſibility, &c. Theſe accounts were written above an hundred years before Chriſt, and ſince that time the calculation of eclipſes has been pretty exact, but the numbers are obſcure, and they are underſtood but by few of the Chineſe themſelves.

F. Kegler, preſident of the tribunal of mathematics, has an old Chineſe map of the ſtars, made long before the Jeſuits gained a footing in China; the Chineſe had marked therein the place of the ſtars inviſible to the naked eye, and they are found with teleſcopes to be exactly placed, regard being had to the proper motion of the ſtars.

Since the dynaſty of Han, who reigned before the coming of Chriſt, there have been ſeveral treatiſes of aſtronomy, and by the reading of theſe books one may judge that the Chineſe have been pretty well acquainted, for above two thouſand years, with the length of the ſolar year of three hundred and ſixty five days and almoſt ſix hours, that they have known even the diurnal motion of the ſun and moon, have underſtood the method of taking the meridian altitudes of the ſun by the ſhadow of a gnomon, and have well enough calculated, by the length of the ſhadow, the height of the pole and the declination of the ſun; they have likewiſe known ſufficiently exact the right aſcenſion of the ſtars, and the time of their paſſing by the meridian; how the ſame ſtars in the ſame year riſe or ſet with the ſun, and how they paſs by the meridian ſometimes at the riſing and ſometimes at the ſetting of the ſun; they

have alſo given names to the ſtars, and have divided the heavens into different conſtellations, by which they could trace the place of the planets, and diſtinguiſh them from fixed ſtars: In ſhort, concludes F. Gaubil, the reading of the Chineſe hiſtory demonſtrates that they have always had in China the knowledge of many things in aſtronomy.

If any credit may be paid to their hiſtory, it is above four thouſand years ſince they eſtabliſhed a ſolar cycle, or revolution for the ſupputation of their annals, not unlike the olympiads of the Greeks: This cycle conſiſts of ſixty years, and is among them a ſort of an age to regulate their hiſtories.

We are informed by F. Nicholas Trigault, who went into China in 1619, and who read upwards of an hundred volumes of their annals, that the celeſtial obſervations of the Chineſe began not long after Noah's flood, and that they made theſe obſervations not like us, by hours and minutes, but by whole degrees; that they have obſerved ſeveral eclipſes, with the hour, day, month, and year on which they happened, but neither the duration nor the quantity of obſcuration; that in ſhort they have much better obſerved comets and new ſtars than the Europeans themſelves: All theſe obſervations, as well of eclipſes as comets and conjunctions, are very ſerviceable in aſcertaining their chronology.

There are three hundred and ſixty five days, and ſomewhat leſs than ſix hours, in their year, and from an epocha regulated by the winter ſolſtice, which was the fixed point of their obſervations, as the firſt degree of Aries is of ours, reckoning from a hundred to a hundred degrees, they calculated the motions of the planets, and adjuſted all things by æquation tables; ſome imagined that they received them from the Ara-

bians, who entered with the Tartars into China; they had a long time before the ſcience of numbers, under which they veiled their political ſecrets, which they taught the princes: They had long ſince an obſervatory on the top of a high mountain at Nanking, with edifices and inſtruments proper for obſervations; all theſe inſtruments were of caſt braſs, and ſo well made, with regard to the variety of their ornaments, that F. Matthew Ricci, who ſaw them in 1499, acknowledged he had never beheld any thing like them in any part of Europe; they had been expoſed to all the injuries of the weather for two hundred years, and yet were as good as new.

There was a large globe among theſe inſtruments, with all the parallel circles and meridians engraved and divided into degrees; it was of ſuch a ſize that three men could not encompaſs it, and was ſupported by a large brazen cube, which opened on one ſide to give entrance to a man, that he might turn the globe about when the obſervators required it; the globe ſerved as well for celeſtial as terreſtrial obſervations, there being neither ſtars nor countries deſigned upon it.

There was alſo a ſphere four yards in diameter with its horizon; inſtead of circles were double rings, repreſenting the uſual circles of the ſphere, which were divided into three hundred and ſixty five, and every degree into the ſame number of minutes; in the middle of the globe of the earth was a tube which turned whatever way the obſervator thought proper, to view the ſtars, and to mark the place on the degrees by the ſituation of the tube.

The third inſtrument was a quadrant, raiſed eight or ten yards upon a ſtone table, pointing to the north, with a ſmall trough, to diſcover by the help of water, when the ſtone was level with the horizon, and the

ſtyle at right angles; they were both divided into degrees, to diſcover, by the means of a ſhadow, the true points of the ſolſtices and equinoxes.

The largeſt of theſe machines was compoſed of three or four aſtrolabes, joined together, with moveable rulers and ſights to obſerve with; one, inclined to the ſouth, repreſented the equinoctial; and the other that croſſed it, the meridian; this latter was moveable to direct it at pleaſure, as was likewiſe a third which repreſented the vertical; the degrees were diſtinguiſhed by ſmall knobs that the obſervation might not be hindered by darkneſs.

The uſes of theſe inſtruments were written in Chineſe characters, with the names of the conſtellations, which are twenty eight in number, as ſhall afterwards be ſhewn, and which anſwer to our twelve ſigns; they ſeem to have been made for the latitude of thirty ſix degrees.

At Peking there were inſtruments of the ſame kind, and probably made by the ſame hand; they were placed in an obſervatory of no great conſideration on any account: At the entrance into the court there appeared a row of apartments for the lodging of thoſe who were concerned in the obſervations; on the right was a narrow ſtaircaſe leading up to a ſquare tower, like to thoſe wherewith they formerly fortified the city walls, which was joined on the inſide to the walls of Peking, and raiſed ten or twelve foot above the rampart. It was upon the platform of this tower that the Chineſe aſtronomers placed their machines, for which there was but juſt room.

F. Verbieſt having judged them uſeleſs for aſtronomical obſervations, perſuaded the emperor to take them away to place others in their ſtead of his own contrivance; the machines are to this day in a hall adjoining to the tower, buried in duſt and oblivion.

"We could only ſee them," ſays F. le Compte, "through a grate; they ſeemed to us to be large, and "well caſt, of a form approaching to our aſtronomical "rings, this was all that we could diſcover; however, "they had thrown into a by-court a celeſtial globe of "braſs, about three foot in diameter, of which we "had a nearer view; the ſhape was a little oval, the "diviſions not very exact, and the whole work inar-"tificially executed.

"They had contrived a gnomon in a low room not "far off; the aperture, through which the rays of the "ſun came, was about eight foot above the floor; it is "horizontal, and formed of two pieces of copper, "which may be turned ſo as to be farther from, or "cloſer to each other, to enlarge or contract the aper-"ture."

"Lower was a table with a braſs plate in the mid-"dle, on which was traced a meridian line fifteen "foot long, divided by tranſverſe lines which are nei-"ther finiſhed nor exact; all round the table there "are ſmall channels to receive the water, whereby it "is to be levelled; this contrivance was the moſt to-"lerable of the Chineſe inventions, and may not be "uſeleſs in a ſkilful perſon's hands."

In the city of Teng fong, of the third order, in the province of Ho nan, which is ſuppoſed by the Chineſe to be the middle of the world, becauſe it was in the middle of their empire, there is at this time a tower to be ſeen, on the top of which Tcheou cong, the moſt ſkilful mathematician ever born in China, who lived twelve hundred years before the birth of Ptolomy, made his obſervations, paſſing whole nights in conſider-ing the riſing, motions, and figures of the conſtella-tions.

He made uſe of a great braſs table, placed horizon-

tally, in making his obſervations, upon which was erected a long plate of the ſame metal like a ſtyle, both being diſtinguiſhed by degrees to mark the projections of the ſhadows ſome days before the ſolſtice, and ſome days after, with intent to mark the preciſe point and retrogradation of the ſun, which was the only epocha of their obſervations, as was before obſerved.

The diligence and aſſiduity of the Chineſe, in making celeſtial obſervations, has cauſed them to ſet up a tribunal of aſtronomy, which is one of the moſt conſiderable of the empire; and depends upon the tribunal of rights, to which it is ſubordinate.

This tribunal is obliged to preſent the emperor with a celeſtial obſervation at the end of every forty five days, wherein is ſet down the diſpoſition of the heavens, the alterations of the air according to the variations of the ſeaſons, with predictions of diſeaſes, droughts, famine, and the days on which there will be rain, wind, hail, ſnow, thunder, &c. ſomewhat ſimilar to what our aſtrologers publiſh in our almanacs; beſides theſe obſervations the principal care of this tribunal is to calculate eclipſes, and to notify to the emperor the day, hour, and part of the heaven in which the eclipſe ſhall happen, how long it ſhall laſt, and how many digits will be obſcured.

The emperor muſt be preſented with this account ſome months before the eclipſe happens, and China being divided into fifteen large provinces, theſe eclipſes muſt be calculated according to the longitude and latitude of the chief city in every province, and a type thereof muſt be ſent throughout the whole empire, becauſe an account muſt be given of every thing in a nation of ſo great curioſity, and ſo very attentive to theſe phenomena.

The tribunal of rites, and the Colao, keep theſe ob-

ſervations and predictions, and take care to ſend them throughout the provinces and cities of the empire, to be there obſerved in the ſame manner as at Peking; the following is an account of the ceremonies obſerved on this occaſion.

Not many days before the eclipſe happens, the tribunal of rites cauſes to be fixed up in large characters, and in a public place, the day, hour, and minute that it will commence, in what part of heaven it will be ſeen, how long it will laſt, when the planet will be totally darkened, how long it will continue ſo, and when it will be free from total darkneſs.

It is neceſſary alſo to acquaint the Mandarines of all orders, that they may appear, according to cuſtom, in their proper habits, with the enſigns of their dignity, in the court of the tribunal of aſtronomy, to wait for the moment that the eclipſe ſhall begin; they have all great tables whereon the eclipſe is deſigned, and they employ themſelves in conſidering theſe tables, and in reaſoning together upon the eclipſes.

As ſoon as they obſerve the ſun or moon begin to be darkned, they fall on their knees and beat the ground with their forehead; at the ſame time is heard a dreadful rattling of drums and kettle-drums throughout the city, according to the ridiculous perſuaſion the Chineſe formerly had, that by this noiſe they aſſiſted the ſun or moon, and prevented the celeſtial dragon from devouring ſuch uſeful planets.

Though the learned and people of quality are quite free from this ancient error, and are perſuaded that eclipſes are owing to a natural cauſe, yet ſuch a prevalence has cuſtom over them, that they will not leave off their ancient ceremonies; theſe ceremonies are practiſed in the ſame manner in all parts of the empire.

While the Mandarines continue proſtrate there are others at the obſervatory, who carefully examine the beginning, middle, and end of the eclipſe, and who compare their obſervations with the ſchemes upon them; they afterwards carry theſe obſervations ſigned and ſealed, to be preſented to the emperor, who likewiſe obſerves the eclipſe in his palace with the like attention: The ſame ceremonies are uſed throughout the empire.

The principal work of this tribunal is the calendar, which is diſtributed every year throughout the empire: There is no book in the world that paſſes through ſo many impreſſions, nor is publiſhed with ſo great ſolemnity; there is always at the head the emperor's edict, by which it is forbid, under pain of death, to make uſe of any other calendar, or publiſh any other, or to alter any thing therein upon any pretence whatſoever: It is neceſſary to print ſeveral millions of copies, becauſe there is no body in China but is deſirous of this book to direct himſelf by throughout the year.

Three tribunals are ſet up at Peking to prepare as many calendars as muſt be preſented to the emperor; one of theſe tribunals is near the obſervatory; the ſecond, wherein is explained the theory of the planets, and the method of calculating their motions, is a kind of public mathematical ſchool; in a word the third, which is pretty near the emperor's palace, is that wherein all affairs are managed belonging to aſtronomy, and where they diſpatch all the acts belonging to this ſcience.

As there are three tribunals for the mathematics, there are likewiſe three claſſes of mathematicians, and formerly the Mahometan aſtrologers compoſed a fourth, but now it no longer ſubſiſts.

It is the firſt of theſe claſſes which is employed in preparing the calendar, calculating the eclipſes of the ſun and moon, and in making the reſt of the aſtronomical ſupputations.

They publiſh every year three kinds of calendars in the Tartarian and Chineſe languages; the ſmalleſt of the three is the common calendar, diſtinguiſhing the year by lunar months, with the order of the days of every month, the hours and minutes of the riſing and ſetting of the ſun, the length of the days and nights, according to the different elevation of the pole in every province, the hour and minutes of the conjunctions and oppoſitions of the ſun and moon, that is the new and full moons, the firſt and laſt quarters, called by aſtronomers the quadratures of this planet, the hour and minute of the ſun's entrance into every ſign and half ſign of the zodiac; for the Chineſe, as I have already ſaid, and ſhall afterwards explain more at large, diſtinguiſh the conſtellations in a manner different from us, and make twenty eight ſigns of the zodiac, which have their diſtinct names.

The ſecond calendar contains the motions of the planets for every day in the year, as they are to appear in the heavens: This is a book not unlike Argol's Ephemerides, in which the places of the planets in the heavens are ſet down to every day, with an exact calculation of the hours and minutes of their motion; they add thereto, for every planet, its diſtance from the firſt ſtar of the neareſt conſtellation, and ſet down the degrees and minutes of this diſtance; they mention likewiſe the day, hour and minute of each planet's entrance into every ſign, but they mention no other aſpects but the conjunctions.

The third calendar is preſented to the emperor only in manuſcript, and contains all the conjunctions of

the moon with the reſt of the planets, and her appulſes to the fixed ſtars, which requires a great exactneſs of calculation.

For this reaſon every day and night throughout the year, there are five mathematicians upon the tower, who continually obſerve the heavens; one attentively conſiders what paſſes in the zenith, another turns his eyes towards the eaſt, a third toward the weſt, a fourth to the ſouth, and the laſt to the north, that they may be exactly acquainted with all that paſſes in the apparent parts of the heavens; they are obliged to keep an exact account of every thing that is remarkable, which they preſent every day to the preſidents of the tribunal of mathematics, and by them to the emperor; their obſervations are ſet down in writing and figures, with the name and hand of thoſe who made them, and the hour in which they were made.

The Chineſe year begins from the conjunction of the ſun and moon, or from the neareſt new moon to the fifteenth degree of Aquarius, which is, according to us, the ſign which the ſun enters about the tenth of January, and ſtays therein till the ſame day in February; from this point their ſpring takes its beginning; the fifteenth degree of Taurus is the point which determines the beginning of their ſummer, the fifteenth of Leo their autumn, and the fifteenth of Scorpio their winter.

They have twelve lunar months, among which ſome conſiſt of twenty nine days, and ſome of thirty; every five years they have intercalary months to adjuſt the lunations with the courſe of the ſun; they divide like us the weeks, according to the order of the planets, to every one of which they aſſign four conſtellations, that is one for each day, in ſuch a manner that after the

twenty eight, which ſucceed each other by ſeven and ſeven, they return to the firſt.

Their day begins like ours at midnight, and ends at the midnight following; but they are only divided into twelve equal hours, each of which contain two of ours; they do not reckon like us by numbers, but by names and particular figures.

They likewiſe divide the natural day into a hundred parts, and every one of theſe parts into a hundred minutes, inſomuch that its extent is ten thouſand minutes, which they obſerve the more exactly, as they are generally perſuaded that there are fortunate and unfortunate minutes, according to the poſition of the heavens, and the ſeveral aſpects of the planets; according to them the hour of midnight is happy, becauſe as they imagine the world was created in that hour; they believe likewiſe that in the ſecond the earth was produced, and that man was formed in the third.

Theſe ſort of impoſtors, who ſeek only to deceive by means of judicial aſtrology, and who foretel future events from the ſituation of the planets and their different aſpects, do not fail to gain credit among weak and ſuperſtitious minds: They make a diſtinction of hours which are deſtined to particular buſineſſes, not unlike our ſhepherd's calendar, wherein they ſhew by characters the proper time to let blood, to take phyſic, ſheer ſheep, cut the hair, undertake a journey, fell wood, ſow, plant, &c. they diſtinguiſh what time is proper to aſk a favour from the emperor, to honour the dead, offer ſacrifice, marry, build houſes, invite friends, and every thing elſe relating to public and private affairs; and this is obſerved ſo ſcrupulouſly by many that they dare do nothing without the direction of the calendar, which they conſult as their oracle.

The following is the manner of preparing their prognoſtications: They take ten characters, which they attribute to the year, each whereof ſignifies one of the five elements, for they acknowledge that number; they combine theſe characters in ſixty different manners, with the names of the twelve hours of the day; then they conſider the twenty eight conſtellations, which have every one a ruling planet; and from the proprieties of the element, the conſtellation, and the planet mixed together, they form their conjectures concerning fortunate or unfortunate events; they have whole volumes written about theſe trifles.

When they were deſirous of giving the miſſionaries the employment of compoſing the calendar they declined it, at which the emperor ſeemed greatly ſurprized: "What!" ſays he to them, "have not you often ſaid "that it was charity towards your neighbour that "brought you into theſe parts? And ſince what I "command is ſo important for the public good, what "reaſon can you have to refuſe this office?" The fathers replied, "That they feared the ridiculous ſu-"perſtitions which were added to the calendar might "be attributed to them:" "This is what I do not de-"ſire," replied the emperor, "for I give no more "credit to them than you; I require nothing of you "but what regards the calendar, and what has relation "to aſtronomy."

Then the fathers complied with the emperor's orders, at the ſame time making a public declaration, in which they not only proteſted that they had no hand in theſe fooleries, but that they abſolutely condemned them, becauſe human actions in no ſenſe depend on the influences of the ſtars.

The calendar, of which I have been ſpeaking, muſt be preſented to the emperor for the year following on

the firſt day of the ſecond month of the year; when the emperor has ſeen it, and given his approbation, the under-officers of the tribunal add to each day the ſuperſtitions before mentioned; afterwards, by the emperor's order, they are diſtributed to the princes, lords, and great officers, and ſent to the viceroy of every province, who puts them into the hands of the treaſurer-general of the ſame province; this latter cauſes them to be printed, and diſtributes them to all ſubordinate governors, and keeps the originals of the impreſſion in his tribunal.

At the head of the calendar, printed in the form of a book in red, is the ſeal of the tribunal of aſtronomy, with the emperor's edict forbidding, under pain of death, to follow or print any other.

The diſtribution of the calendar is made every year with a great deal of ceremony; on this day all the Mandarines of Peking appear early in the morning at the palace; on the other hand the Mandarines of the tribunal of aſtronomy, in their proper habits, and with the enſigns of their offices, according to their degrees, reſort to the uſual place where their aſſemblies are held to accompany their calendars.

On a large gilded machine in the form of a pyramid, divided into four partitions one above another, are placed the calendars intended for the emperor, the empreſs, and the qeeens; they are in large paper covered with yellow ſattin, the emperor's colour, and handſomely incloſed in bags of cloth of gold; this machine is carried by forty footmen, cloathed in yellow.

Then they carry ten or twelve other machines of a ſmaller ſize, and ſurrounded with red curtains, upon which they place the calendars intended for the princes

of the blood; they are bound in red ſattin, and are incloſed in cloth of ſilver.

Immediately after ſeveral tables follow covered with red carpets, on which are placed the calendars of the grandees, the generals of the army, and the other officers of the crown, all ſealed with the ſignet of the tribunal of aſtronomy, and covered with a yellow cloth, and every table has the name of the Mandarine or tribunal to which the calendars belong.

The porters, who quit their loads at the laſt gate of the great hall, and place the tables on each ſide of the paſſage, leave nothing in the middle but the machine that carries the imperial calendar.

The Mandarines of the aſtronomical academy take the calendars of the emperor and the queens, and lay them upon two tables covered with yellow brocade, which ſtand at the entrance of the imperial hall; there they fall upon their knees, and proſtrate themſelves three times on the earth, and then deliver them to the intendants of the palace, who walk in order, according to their degrees, and preſent them to the emperor; afterwards the eunuchs carry them to the emperor and the queens.

Mean while the aſtronomical Mandarines return to the great hall, where the Mandarines of all degrees attend, to whom they diſtribute the reſt of the calendars in the following manner.

Firſt all the princes ſend their chief officer to the imperial paſſage, where they receive on their knees their maſter's calendars, and thoſe of the Mandarines of their houſhold, which amount at leaſt to twelve or thirteen hundred calendars for the court of every prince.

Afterwards the lords, the generals of the army, the Mandarines of all the tribunals, appear and receive

on their knees a calendar from the aſtronomical Mandarines.

When the diſtribution is over every one returns to his rank in the hall, and turning himſelf towards the moſt inward part of the palace, at a ſignal given, falls upon his knees, and bows three times to the ground; after three genuflexions, and nine profound reverences with the head in acknowledgment of the favour done him by the emperor, he returns to his own houſe.

After the example of the court, the governors and Mandarines of the provinces receive the calandar in the ſame manner in the capital city, each according to his rank: As for the people there are none of them ſo poor but they will buy a calendar every year, and on this account they print in every province above thirty thouſand a year.

In ſhort it is a work ſo reverenced by the Chineſe and their neighbours, and ſo important to the kingdom, that the receiving of the calendar is a declaration of being a ſubject, and tributary of the prince, and thoſe that refuſe it are looked upon as ſetting up a ſtandard of rebellion.

A ſtrong mark of the veneration that the people have for the calendar, and for their aſtronomy, is that Yang quang ſien, the greateſt enemy of the Chriſtian name, in a book full of calumnies, which he publiſhed to decry the religion and aſtronomy of Europe, repeats almoſt in every page, "That it is unworthy of the "majeſty of the empire to ſubject their calendar to be "reformed by European aſtronomers; for it is as tho' "(ſaid he), a vaſt and flouriſhing ſtate ſhould receive "laws from a ſmall foreign nation."

We have already taken notice that the Chineſe aſtronomers divide the heavens into twenty eight conſtellations, in which they comprehend all the fixed

ſtars, as well thoſe which are in the zodiac as thoſe that lie near it; the following is a catalogue of the names of their conſtellations.

1. Kao.	11. Hio.	21. Tſan.
2. Kang.	12. Guey.	22. King.
3. Ti.	13. Che.	23. Quey.
4. Fang.	14. Pie.	24. Lieou.
5. Sin.	15. Juey.	25. Sing.
6. Vi.	16. Leou.	26. Chang.
7. Ki.	17. Guey.	27. Ye.
8. Teou.	18. Mao.	28. Chin.
9. Lieou.	19. Pie.	
10. Niou.	20. Tſury.	

It was the emperor Yu, of the family of Hia, who divided the heavens into the twenty eight conſtellations to diſtinguiſh the diverſe manſions of the moon; for though the Chineſe have diſtinguiſhed, like us, the courſe of the ſun into three hundred and ſixty five degrees and fifteen minutes, of which we compoſe one year, they regard more the lunations than the courſe of the ſun.

The ſpaces which they allow to their conſtellations are unequal as to the number of their degrees, but altogether form a circle of three hundred and ſixty degrees: Upon theſe principles they make quadrants, whoſe ſtyle marks by its ſhadow the revolutions of the heavenly bodies, and the hour and part of the day or night in which each conſtellation paſſes the meridian of Peking.

Their manner of beginning the year, by the neareſt new moon to the month of February, makes Piſces to be their firſt ſign, Aries their ſecond, and ſo of the reſt; and becauſe there are but twelve ſigns to make

the twelve ſolar months, and the lunations do not always quadrate with theſe ſigns, they have intercalary lunations to which they give the ſame ſign as the precedent had, to recommence the order of the months according to the ſigns that are attributed to them; by this means they have months that follow the order of the ſigns, and others which have ſome days out of the ſigns.

This manner of calculation, and inſerting the intercalary months, makes the year of thirteen months return from time to time: This gave occaſion for the re-eſtabliſhment of the miſſionaries in China, and put an end to the cruel perſecution which they ſuffered by means of an Arabian aſtronomer and a Chineſe Mandarine, who were enemies to the Chriſtian religion.

As the aſtronomical tables of the Chineſe were imperfect, and becauſe after a certain number of years they were obliged to make corrections, otherwiſe there would be very enormous faults in the calendar publiſhed by the aſtronomers, they had recourſe to the Europeans, but more eſpecially to F. Ferdinando Verbieſt: They were then loaded with nine chains, and cloſely guarded in the public priſons of the city. The late emperor Chang hi, who was then young, ſent four great Mandarines to aſk the miſſionaries if they knew of any fault in the Chineſe calendar, as well of the preſent as of the ſucceeding year: Theſe two calendars had been made according to the ancient Chineſe aſtronomical tables.

F. Verbieſt anſwered, That the calendars were full of faults, particularly in giving thirteen months to the following year: The Mandarines being informed of ſo groſs an error, and of ſeveral other faults that had been obſerved, went immediately to give an account of them

to the emperor, who ordered the miſſionaries to attend at the palace the next morning.

At the hour appointed F. Buglio, F. Magalhaens, and F. Verbieſt were conducted into the great hall of the palace, where all the Mandarines of the tribunal of aſtronomy expected them; in the preſence of which aſſembly F. Verbieſt diſcovered the errors of their calendar.

The young emperor, who had never ſeen them, ſent for them into his apartment with all the aſtronomical Mandarines. F. Verbieſt was placed directly over againſt him, when the emperor aſked him very mildly, "If he could make it evidently appear, by experiments, whether the calendar agreed with the heavens or not?"

The father replied, "That it was a thing eaſily demonſtrated, that the inſtruments in the obſervatory were made for that purpoſe, inſomuch that perſons employed in affairs of ſtate, and very little verſed in aſtronomy, may in an inſtant judge of the calculations, and ſee if they agree with the heavens or not. If your majeſty deſires it, replied the father, let there be placed in one of the courts a ſtyle, a chair, and a table of the ſize required, and I will immediately calculate the projection of the ſhadow at any hour propoſed; by the length of the ſhadow it will be eaſy to determine the altitude of the ſun, and from thence his place in the zodiac. By this method it will be no hard matter to judge whether its place is exactly calculated in the calendar for every day."

The expedient pleaſed the emperor: He aſked the Mandarines, "If they underſtood this manner of ſuputation, and whether they could predict the length of the ſhadow?" The Mahometan boldly replied,

"That he underſtood it; and that it was a ſure me-
"thod to diſtinguiſh the true from the falſe."

Soon after the emperor commanded the Colao, and the Mandarines that were near him, to ſee every thing prepared; but while the orders were putting in execution the Mahometan thought proper to retract what he had ſaid, and to confeſs his ignorance of that method of ſupputation.

The impudence of the aſtronomer greatly incenſed the emperor, inſomuch that he would have puniſhed him on the ſpot, if he had not thought it more prudent to defer it till the trial was over, that his impoſture might be diſcovered in the preſence of his protectors: He therefore ordered the father to make his calculation alone that very day.

There was in the obſervatory at Peking a ſquare column of braſs eight foot three inches high, it was erected on a table of the ſame metal eighteen foot long, two broad, and an inch thick; this table, from the baſe of the column, was divided into ſeventeen foot, and each foot into ten parts, which they call inches, and theſe into ten parts, called minutes. The whole was ſurrounded near the edges with a ſmall channel about half an inch broad, and of the ſame depth; this they filled with water that they might by that means place the table parallel to the horizon. This machine ſerved formerly to determine the meridian ſhadows, but the column was pretty much bended by length of time, and did not ſtand at right angles with the table.

This ſtyle being meaſured and found to be eight foot, four inches, and nine minutes, the father faſtned to the top of the column a ſmooth board parallel to the horizon, and preciſely of the determined height, and by means of a perpendicular let fall from the plank

to the table he marked the point from whence he was to begin to reckon the length of the ſhadow. The ſun was then near the winter ſolſtice, and conſequently the ſhadows were longer than at any other time of the year.

After making his calculation, according to the rules of trigonometry, he found that the ſhadow of the ſtyle ought to be the next day at noon ſixteen foot, ſix minutes and a half: He drew a tranſverſe line on the braſs table to ſhow that the ſhadow was to extend ſo far, and no farther: All the Mandarines met the next day at the obſervatory by order of the emperor, and at noon the ſhadow fell exactly upon the line that the father had traced on the table, at which they ſeemed greatly ſurprized.

The emperor took a great pleaſure in the relation that was made of this experiment, and ordered the father to do the ſame again the next day in the great court of the palace. The Colaoes gave notice of it to F. Verbieſt, and taking a braſs ruler, which he had then in his hand, they determined two foot and eight inches for the length of the ſtyle.

At his return to his lodgings he made his calculations, after he had prepared a plank well plained, and another to ſerve for a ſtyle, the firſt was divided into feet and inches, and had three ſcrews, by which it was eaſy to give it a horizontal ſituation; he went next day to the palace with this machine, and placed it in the great court, and adjuſted it directly to the meridian, after he had marked with a right line on the horizontal plank the extremity of the ſhadow, which according to his calculation was to the four foot, three inches, four minutes and a half.

The Colaoes, and the reſt of the Mandarines appointed to attend upon the obſervation, met in the ſame

place a little before noon, where they ſtood in a circle round about the ſtyle, and as the ſhadow ſeemed very long, becauſe it did not as yet fall upon the plank, but on one ſide of the machine upon the ground, the Colaoes whiſpered and ſmiled on each other, verily believing that the father was deceived.

But a little before noon the ſhadow aſcended the horizontal plank, and ſhortening itſelf all of a ſudden at noon fell upon the line that was drawn preciſely.

The Tartarian Mandarine diſcovered his ſurprize more than any of the reſt, and cried out, What a ſkilful maſter have we here! the reſt of the Mandarines did not ſpeak a word, but from that moment began to conceive a jealouſy of the father which has laſted ever ſince.

They acquainted the emperor with the ſucceſs of the obſervation, and made him a preſent of a machine, which he received very graciouſly. It was invented by F. Magalhæens, who had made it in the night-time with great exactneſs.

The emperor not being willing to determine too haſtily about an affair, which appeared to him of great conſequence, put the father to a third trial, which was attended with like ſucceſs.

The Mahometan aſtronomer, of whom I have ſpoken, had no other knowledge of the heavens than what he gathered from ſome old Arabian tables, which he had received from his anceſters. However he had been labouring a year at the reformation of the calendar, which was acknowledged to be very faulty.

He had made according to his manner, and preſented to the emperor in two volumes, the calendar of the following year: the firſt volume contained the lunar months, days and hours of the new and full moons, and the quadratures, the time of the ſun's entrance into

and coming to the middle of every ſign, according to the Chineſe method. In the ſecond was the place of the planets for every day in the year, much after the manner of Argol's Ephemerides.

The emperor being perſuaded, by the three obſervations of the ſhadow, that the calculations of F. Verbieſt agreed with the heavens, ordered him to examine the two books of the Mahometan aſtronomer.

It was not difficult to find a great number of faults in this new calendar; for beſides every thing being ill placed, and worſe calculated, they abounded with evident contradictions; it was a mixture of the Chineſe and the Arabian, inſomuch that it might as well be called an Arabian as a Chineſe calendar.

F. Verbieſt made a ſmall collection, wherein he mentioned the moſt groſs errors in each month in the motion of the ſeven planets, and at the bottom wrote a petition, which was preſented to the emperor. His majeſty immediately convened a general aſſembly of the reguloes, Mandarines of the higheſt claſs, and the principal officers of all the orders, and of all the tribunals of the empire, and ſent the father's petition that they might deliberate upon it, and come to proper reſolutions. There never was ſeen ſo conſiderable an aſſembly, nor ſo ſolemnly convened on account of matters belonging to aſtronomy, inſomuch that one would have imagined they had been called to conſult the welfare and preſervation of the empire.

They there read publickly F. Verbieſt's petition, upon which the lords and principal members of the council unanimouſly declared, that the correction of the calendar being an important affair, and aſtronomy a difficult ſcience, underſtood but by few, it was neceſſary to examine publickly, and by the inſtruments

of the obſervatory, the faults mentioned in the petition.

This decree of the council was confirmed by the emperor, who named, beſides the Colaoes and the Mandarines, all the preſidents of the chief tribunals to aſſiſt at the obſervations of the ſun and the planets, which were to be made in the obſervatory.

The ſupreme tribunal of rites, to which that of aſtronomy is ſubordinate, ſent for F. Verbieſt and the Mahometan aſtronomer, and ordered them as ſoon as poſſible to regulate the obſervations they intended to make, and to put them in writing, with the manner of the performance.

The father had already calculated the places of the ſun, moon, and the reſt of the planets, determining the degrees and the minutes of the ecliptic where they were to be on certain days, wherein the Mahometan was moſt miſtaken. Theſe calculations were preſented to the Mandarines of the tribunal, who determined that they ſhould both come to the obſervatory, and with inſtruments in their hands ſign and ſeal the degree and minute where they ſuppoſed each planet was to be.

The firſt obſervation was therefore made on the day the ſun enters the fifteenth degree of Aquarius; a large quadrant, which the father had fixed on the meridian, ſhewed by its ruler the meridian altitude of the ſun for that day, and the minute of the ecliptick that it was to be in at noon.

Is was above ſix hours that the ruler had been put in that poſition, to which he affixed his ſeal. The hour being come, the ſun paſſed through one of the ſights, and fell as was expected on the other. A ſextant of ſix foot radius, which he fixed ſix days before to the altitude of the æquator, ſhowed the ſun's de-

clination very exactly, insomuch that they could not find the least fault.

Fifteen days afterwards the father had the happiness to succeed in the same manner, observing with the same instruments the sun's entrance into the sign Pisces. This observation was necessary to determine the famous question, whether the intercalary month was to be taken out of the calendar or not? The meredian altitude of the sun and its declination that day plainly proved the affirmative.

For the place of the rest of the planets, as it was necessary to observe them in the night-time to refute what had been set down in the Mahometan's calendar, he thought he could not do it more plainly and sensibly than in determining their distances from the fixed stars. He had already calculated these distances, and in the presence of certain Mandarines he marked on a map of the zodiack the distance of these stars at the hour fixed by the emperor.

On the day that the experiment was to be made the court was divided in their opinions about what the father had promised; in the evening the Colaoes, the Mandarines, the mathematicians of the three tribunals, as well Chinese as Tartarian, flocked from all parts of the city, the latter with a great train of men on horseback, and the former in chairs carried on their servants shoulders.

Having clearly perceived that, of all the father had proposed to demonstrate, there was no failure in the least tittle, they acknowledged that the calendar calculated by the Mahometan was full of faults, and took care to inform the emperor of it.

The emperor referred the affair to the council, where the astronomers Yang quang sien and Uming huen,

contrary to cuſtom, found means to be preſent, and by their artifices divided the votes of the aſſembly.

The Mandarines, at the head of the aſſembly, could not bear with patience that the Chineſe aſtronomy ſhould be aboliſhed, and that of Europe introduced in its room: they maintained that the majeſty of the empire would ſuffer if they altered any thing in this ſcience, ſince hitherto all nations have derived their laws, politicks, and ſkill in government from them; and they affirmed it was better to adhere to the aſtronomy of their foreſathers, though a little defective, than to introduce another which they were not accuſtomed to. They attributed to the two aſtronomers the glory of ſtanding up for their country, and looked upon them as zealous defenders of the grandeur of their anceſtors.

The principal Tartarian Mandarines were of a contrary opinion, and pleaded in behalf of F. Verbieſt; the diſputes were carried on, on both ſides, with a great deal of warmth; at length Yang quang ſien, depending upon the protection of the miniſters of ſtate who were his friends, addreſſing himſelf to the Tartars, ſpoke thus. "If you favour the opinion of Ferdi-"nand, by receiving the aſtronomy that he would in-"troduce, you may aſſure yourſelves that the empire "of the Tartars will not laſt long in China."

So raſh a diſcourſe was received with indignation by the Tartarian Mandarines, who immediately informed the emperor of all that had paſſed. His majeſty ordered that very inſtant that Yang quang ſien ſhould be loaded with irons, and ſhut up in the common priſon.

At the ſame time F. Verbieſt received orders to reform the calendar and the aſtronomy of the whole empire; he had alſo the ſuperintendency of the tribunal of mathematicks, and they offered to dignify him with

veral other titles, which he obſtinately refuſed in four memorials which he preſented to the emperor.

When F. Verbieſt ſaw himſelf at the head of the aſtronomical tribunal he preſented a memorial to the emperor, ſetting forth the neceſſity of retrenching a month from the current year, which was contrary to the courſe of the ſun; and as the Chineſe aſtronomers had left out the thirteenth month this year he made it appear that it was an unheard of miſtake, and that even according to their own calculations the intercalary moon belonged to the following year, which memorial was referred to the privy council.

The members of the council looked upon it as a melancholy thing, that it ſhould be neceſſary to lop a whole month from the calendar that had been ſo ſolemnly received, but they neither could nor durſt contradict F. Verbieſt; they thought it moſt proper to ſend the chief preſident of the council to make their remonſtrances.

The Mandarine accoſted the father in a very mild manner: "Take heed," ſays he to him, "what you "are going to do, you are about to make us deſpicable among the neighbouring nations, who follow and "reſpect the Chineſe calendar, by letting them know "that there has been ſo groſs an error that it is neceſſary "to take a whole month from the current year; cannot you diſſemble this matter, or at leaſt find out an "expedient to ſave our reputation? If you can you will "do us great ſervice. The father replied, that it was "not in his power to make the heavens agree with "their calendar, and that there was an indiſpenſible "neceſſity of taking away a month."

Upon this they publiſhed an edict through the empire to this effect, That, according to the aſtronomical obſervations of F. Verbieſt, it was neceſſary to take

away the intercalary month from the current year, therefore every perſon was forbid to uſe it for the future. They who were ignorant of aſtronomy were greatly ſurpriſed at this, and could not imagine what was become of this month that was ordered to be retrenched, and wanted to be informed where it was kept in reſerve.

The father having thus regulated the courſe of the ſtars, and fixed the Chineſe year, he applied himſelf to re-eſtabliſh whatever elſe was defective in the tribunal of the mathematics; his chief care was to furniſh the obſervatory with new inſtruments proper for aſtronomical obſervations; he cauſed them to be made with the greateſt exactneſs, but however admirable they appeared, the Chineſe, who are great admirers of antiquity, would have preferred the old ones, had not the emperor, by an expreſs order, prohibited the uſe of them.

Theſe inſtruments are well caſt, very large, adorned with figures of dragons, and well contrived for the uſes to which they are deſigned: nothing of this ſort would be comparable to them, if the niceneſs of the diviſions were anſwerable to the reſt of the work, and inſtead of plain ſights teleſcopes had been uſed, according to the method of the royal academy.

F. le Compte, who examined theſe inſtruments very attentively, gives us the following exact deſcription of them.

The firſt inſtrument is an armillary ſphere of ſix feet in diameter, which is ſupported by four dragons' heads, whoſe bodies after ſeveral windings are faſtned to the ends of two brazen beams laid acroſs, that bear the whole weight of the machine. Theſe dragons, which were picked out among all other creatures, becauſe the emperor bears them in his coat of arms, are

s the Chineſe repreſent them, wrapt up in clouds, with long hair on their heads between their horns, a uzzy beard under their lower jaw, flaming eyes, long harp teeth, their mouth open, and breathing a whole ream of flame. Four lions of the ſame metal ſtand nder the end of the ſame beams, whoſe ends are raiſed igher or lower by ſcrews faſtned with them. The ircles are divided both in their exteriour and interiour ſurface by croſs lines into three hundred and ſixty egrees each, and each degree into ſixty minutes, and he latter into portions of ten ſeconds each by ſmall pins.

The ſecond inſtrument is an equinoctial ſphere of ix feet diameter, ſupported by a dragon, who bears it n his back bowed, and whoſe four claws ſeize the four ends of its pedeſtal, which as the former is formed of two brazen beams croſs-wiſe, whoſe ends are alſo born by four ſmall lions, which ſerve to ſet it right. The deſign is noble and well executed.

The third inſtrument is an azimuthal horizon, ſix feet in diameter, and is very uſeful for taking of azimuths; it is compoſed of a large circle horizontally placed, the double ruler which makes the diameter lides along the whole limb, according to the degrees of the horizon that are to be marked, and carries round along with it an upright triangle, the upper angle of which is faſtened to a beam raiſed perpendicular from the centre of the ſaid horizon. Four twiſted dragons bow their heads under the inferior limb of the great circle, to make it faſt; and two others wound round two ſmall columns, mount on either ſide ſemi-circular-wiſe, as high as the ſaid beam, to which they are faſtened, to keep the triangle ſteady.

The fourth inſtrument is a large quadrant, whoſe radius is ſix feet, and the limb is divided into portions

of ten ſeconds each; the lead which ſhews its vertical ſituation, weighs a pound, and hangs from the center by a very fine braſs wire; the ruler is moveable, and ſlides eaſily along the limb. A twiſted dragon encompaſſed with clouds, ſeizes on all parts the ſeveral plates of the inſtrument to faſten them, leſt they ſhould ſtart out of their due poſition. The whole body of the quadrant hangs in the air, and a fixed axis runs through its center, round which the quadrant turns towards the parts of the heavens which the mathematician chooſes to obſerve; and leſt its weight ſhould cauſe it to ſhiver, and looſe its vertical poſition, a beam is raiſed on each ſide, ſecured at the bottom by a dragon, and fixed to the middle beam or axis by clouds which ſeem to come out of the air. The whole work is ſolid and well contrived.

The fifth inſtrument is a ſextant, whoſe radius is about eight feet; this is ſupported by a beam, the baſis of which is cancave, made faſt with dragons, and croſſed in the middle by a brazen pillar, on one end of which is an engine, the help of whoſe wheels ſerves to facilitate the motion of that inſtrument. On this engine reſts the middle of a ſmall brazen beam, which repreſents a radius of the ſextant, and is faſtened to it. Its upper part is terminated by a thick cylinder, which is the center, round which the ruler turns, and the lower is extended above two feet beyond the limb, that it may be graſped by the pully which ſerves to raiſe it. Theſe large and heavy machines ſerve rather for ornaments of the obſervatory, than for the uſe of the obſervers.

The ſixth and laſt machine is a celeſtial globe of ſix feet diameter, and is in my opinion the faireſt and beſt executed of them all. The globe itſelf is brazen, exactly round and ſmooth: the ſtars well made, and in

their true places, and all the circles of a proportionable breadth and thickneſs. It is beſides ſo well hung, that the leaſt touch moves it, and though it is above two thouſand weight, the leaſt child may elevate it to any degree. On its large concave baſis reſt in an oppoſite ſtation four dragons, whoſe rugged hair ſuſtains the horizon, which is very curious on account of the beauty of its workmanſhip and its variety of ornaments. The meridian in which the pole is fixed, reſts upon clouds that iſſue out of the baſis, and ſlides eaſily between them, its motion being facilitated by ſome hidden wheels, and moves with it the whole globe, to give it the required elevation. Beſides which the horizon, dragons, and two brazen beams which lie croſs in the center of the baſis's concavity, are all moved at pleaſure, without ſtirring the baſis, which ſtill remains fixed; this facilitates the due placing of the horizon, whether in reſpect of the natural horizon, or in reſpect of the globe. Theſe machines being moſt of them above ten feet from the ground, are encompaſſed with marble ſteps in the form of an amphitheatre, for the greater conveniency of the aſtronomers.

Of the ARTS *and* MANUFACTURES *of the* CHINESE.

THE principal manufacture of China is that of ſilk, which employs a vaſt number of people, and is to that empire what the woollen manufacture is to Great Britain.

Italy in former times received the rich preſent of ſilk from Greece, which was worth its weight in gold, in the times of the Roman emperors; Greece was indebted to the Perſians for it, and theſe, according to authors who have wrote with moſt ſincerity, as M. de Herbelot remarks, own, that they originally got their ſilk-worms, and learnt the art of managing them, from China.

It would be difficult to find any accounts of ſo early a time as that wherein ſilk-worms were firſt found in China, and yet the diſcovery of them is imputed by the moſt ancient writers to Si ling, one of the wives of the emperor Hoang ti.

The people made uſe of the ſkins of animals till the reign of this queen; when the country was but newly cleared, and the inhabitants of the country multiplying greatly, and not finding ſkins ſufficient, neceſſity made them induſtrious, ſo that they found out cloth to cover themſelves withal, but they were obliged to this princeſs for the invention of the ſilk manufacture.

The empreſſes afterwards agreeably employed themſelves in feeding and hatching ſilk-worms, in ſeparating the ſilk, and putting it to a proper uſe: There was even an orchard for mulberry-trees ſet apart in the palace, where the empreſs, attended with the queens and ladies of the court, went to gather the leaves of three

branches with her own hands, which her ſervants brought within her reach; the fine pieces of ſilk that were made by her order, or which ſhe made herſelf, were intended for the ceremony of the great ſacrifice to Chang ti.

Policy it is thought rather than any thing elſe, gave riſe to this practice, with an intention by ſuch great examples to engage the princes, ladies of quality, and all the people in general to encourage ſilk-worms.

This cuſtom has been for ſome time neglected; yet there is a particular diſtrict within the walls of the palace, full of houſes, wherein the French church ſtands, the paſſage to which is ſtill named The road that leads to the palace, ſet aſide for ſilk-worms, for the amuſement of the empreſs and the queens.

China may be called the country of ſilk, for it appears to be inexhauſtible, furniſhing ſeveral nations in Europe, and Aſia; and the emperor, the princes, the domeſticks, the men of letters, the Mandarines, and all in general that are in pretty good circumſtances, wear garments of ſilk, and are cloathed with damaſk or ſattin: none except the common people wear blue callicoes.

All the provinces of the empire furniſh exceeding fine ſilks, yet that which comes from Tche kiang is the beſt. The Chineſe eſteem that ſilk to be beſt which is fine, white, and ſoft; for if it appears rough they conclude that it is bad. The ſilk is often not fit to be milled when it is brought into Europe, for they burn it by doing it over with a certain water made of rice and lime, to make it look well.

But there is nothing eaſier than to mill that which is good; a Chineſe workman can mill this ſilk above an hour together without reſting, that is without breaking

a thread, ſo that there can be nothing more beautiful or elegant.

They make uſe of mills very different from thoſe in Europe; two or three wretched blades of bamboo, with a cog-wheel, are enough; it is amazing to ſee the ſimplicity of the inſtruments with which they make the fineſt ſilk.

There is another ſort of ſilk at Canton which comes from Tong king, that is not ſo good as that which comes from Tche kiang, and they make the fineſt pieces in the province of Kiang nan of this ſilk, for the beſt workmen frequent this province, who furniſh the emperor with ſilks for his own uſe, and to make preſents; the great trade that they carry on at Canton, whither all ſtrangers reſort, likewiſe draws many of the beſt workmen thither.

As the Chineſe prefer the uſeful to the agreeable, they confine themſelves to the making of plain ſilks; but if they were certain of a market, they could make as rich ſilks as any in Europe.

They indeed make cloth of gold, but they do not make the gold into ſmall wire, that they may mingle it with the thread, as is done in Europe, they are ſatisfied with gilding a long ſheet of paper, which they cut into ſmall pieces, and very ingeniouſly cover ſilken threads with it.

When the cloth firſt comes out of the workman's hands it is very elegant, but it does not laſt long, and is not fit for garments, becauſe the luſtre of the gold is ſoon tarniſhed with the damp air; but it does very well for making ornaments for churches, and for furniture. Nobody makes uſe of this cloth but Mandarines and their wives, and they not very often.

Beſides the ſilks which have been already mentioned, the Chineſe make uſe of fine flowered gauzes, of which

their ſummer habits are made, damaſks of all kinds and colours, black ſattins of Nanking, ſtriped ſattins, courſe taffeties that are very uſeful, and many other kinds, ſome flowered like grograms, others that are genteelly ſtriped or marbled, or worked with little roſes, &c. others the flowers of which are open like gauzes, crape, pluſh, brocade, and many kinds of velvet; the crimſon colour is the deareſt, but one may be eaſily deluded in it; by mixing the juice of limon with lime, and putting a few drops of it on different places, is the beſt way to find out the falſe; if it does not keep its colour, it is counterfeit.

Laſtly, the Chineſe have a great number of other ſilks, whoſe names are not known in Europe, but there are two ſorts that are moſt frequently worn amongſt them.

1. A kind of ſattin not ſo gloſſy but ſtronger than the European, which is named Touan tſe; there are ſome variegated with butterflies, flowers, birds, trees, &c. and ſome plain.

2. Their drawers and linings are made of a particular kind of luteſtring, called Tcheou tſe: it is cloſe, and yet ſo pliant, that if it is folded and preſſed with the hand it will not take the impreſſion of the fold; it may be waſhed like linnen, without its gloſs being much impaired.

The Chineſe workmen give a gloſs to the Tcheou tſe or luteſtring, with the fat of a river Porpus, which they call Kiang tchu, that is, Hog of the river Yang tſe Kiang, for porpoiſes are ſeen in this great river, which is about ſixty leagues from the ſea; they are not ſo large as thoſe in the ſalt water, but they leap and play like them, and follow one another in a line in companies through the freſh water.

They purify the fat by waſhing and boiling; then

they dip a fine bruſh in it, and rub the ſilk over from top to bottom always the ſame way, and only on the ſide they want to make gloſſy. The workmen burn the ſame melted fat in their lamps inſtead of oil, when they work at night: the ſmell of it keeps the flies from the place where they work, which is thought to be a great benefit, for theſe inſects ſpoil the work by ſettling on it.

The province of Chan tong produces a particular kind of ſilk, which is found in large quantities in the fields, and on the trees; it is manufactured into a ſtuff called Kien tcheou. Small inſects much like caterpillars make this ſilk; they ſpin it into long threads, and not into a round or oval cod, like the ſilk-worms; theſe threads as they are driven about by the wind, hang upon the buſhes and trees, and are collected to make a kind of ſilk, which is not ſo fine as that made of the ſilk ſpun in houſes, but theſe worms are wild, and eat either mulberry or any other leaves: people who do not know this ſilk, would imagine it to be either a coarſe kind of drugget, or unbleached cloth.

There are two ſorts of worms which ſpin this ſilk; the firſt, which are much larger and blacker than the common ſilk-worms, are called Tſouen kien; the ſecond are called Tiao kien, and are not ſo large.

The ſilk of the firſt is of a reddiſh grey, that of the other is darkiſh: the ſtuff is between both colours that is made of theſe materials, it is very cloſe, does not fret, and wears well, waſhes like linen, and when it is good it will take no damage by ſpots, even though oil were to be ſpilt on it.

The Chineſe are very fond of this ſtuff, and it is ſometimes as dear as the fineſt ſilks or ſattin. As the Chineſe are very ſkilful at imitating, with the waſte of the Tche kiang ſilk, they make a falſe kind of Kien

tcheou, which might eaſily be taken for the genuine, if not properly inſpected.

A manufacture of ſtockings, ribbons, and ſilk buttons has been for ſome time ſet up at Canton, all which are made very good; the largeſt buttons may be bought for ten pence a dozen, and ſilk ſtockings for a tael.

Since the goodneſs and quantity of ſilk chiefly depends on the management of the worms that produce it, the method which they follow in China may become as uſeful as it is curious. A reputed author, who lived under the government of Ming, and who was of a province that abounds in ſilk, has wrote a pretty large volume on this ſubject, of which the following is an abridgment.

An ABRIDGMENT *of an ancient* CHINESE BOOK *that teaches the* MANAGEMENT *of* SILK-WORMS, *ſo as the greateſt quantity and beſt ſort of ſilk may be obtained.*

THE Chineſe author begins with the cultivation of mulberry-trees, whoſe leaves nouriſh the ſilk-worms: becauſe theſe inſects, like other animals, unleſs they are properly fed, are not capable of working. He makes mention of two kinds of mulberry-trees, the true ones, which are named Sang, or Ti ſang; but it muſt not be imagined that they bear as large mulberries as ours; the moſt uſeful part of them is their leaves, and they have no other intention in cultivating them, than to make a greater number of leaves ſhoot out.

There are others which grow wild, and are named Tche or Ye ſang; theſe are ſmall trees, whoſe fruit and leaves are not like thoſe of the mulberry-tree; their leaves are little, rough, and round, ending in a point, and the edges are ſcolloped; the fruit of the Tche re-

ſembles pepper, growing on the ſtem of every leaf, the thick and thorny branches grow in the ſhape of a buſh; theſe trees make a kind of foreſt, and grow naturally upon the hills.

There are ſome ſilk-worms which are hatched in the houſe, and afterwards put upon theſe trees, where they make their cods, and are nouriſhed; theſe worms are longer and larger than the houſe ones, and although their work is not worth ſo much, nevertheleſs it has its excellence, as may be ſeen from what I have mentioned of the ſtuff named Kieu tcheou: it is the ſilk that theſe worms produce, that the ſtrings of the muſical inſtruments are made of, becauſe it is ſtrong and reſounding.

We muſt not imagine that theſe wild mulberry-trees or Tche demand no attendance, and that it is enough to load them with ſilk-worms, for there muſt be a good many paths made in theſe little woods in order to pluck up the weeds that grow below the trees. The weeds are prejudicious, becauſe they are a ſhelter for inſects, and eſpecially ſerpents, who delight in deſtroying theſe large worms: the roads are likewiſe very proper, that the keepers may conſtantly go about the wood in the day-time with a gun or long pole, to drive away the birds that are enemies to theſe worms, and to ſound a large copper baſon at night to keep away the birds of night. This care muſt be always taken till the time of collecting the work.

It muſt be remarked, that thoſe leaves muſt be taken off in the ſummer which the worms have not touched in the ſpring, as the leaves of the new ſpring would have very pernicious and poiſonous qualities, if they were left on the tree. The circulation of the ſap is clearly explained in a Chineſe book of plants; it is imagined that the ſap, circulating into the body of the

tree from the old leaves, hurts the whole maſs by its rankneſs, which ariſes to the utmoſt parts of the branches from the root of the tree.

It is proper to cultivate the tree Tche, for the nouriſhment of the houſe-worms after the manner of the true mulberry-trees; but it is needful above all things to ſow millet in the land where they are planted at a proper diſtance from each other; the millet corrects the harſhneſs of the ſmall leaves, which grow in greater plenty and thicker; the worms ſpin the earlieſt and make the ſtrongeſt ſilk that live upon theſe leaves.

If the webs that hang upon trees in Europe were to be carefully obſerved, perhaps ſome ſuch diſcovery might be made: they ſhould be taken before the worms change into butterflies, for when they forſake their webs, they do not leave their eggs in them, the moſt part of which are ruined by ſeveral accidents. Many of theſe vigorous webs ſhould be collected, in order to have butterflies of both ſexes; the next year the eggs being hatched, the worms ſhould be put upon the trees from whence they were taken, where they might be fed without any inconvenience: it is probable that it was in this way that the Chineſe diſcovered the ſilk-worms.

A remark has been made, which the Chineſe author takes no notice of, and which however may be of uſe, viz. That in place of the tree Tche, whoſe leaves feed the ſilk-worms that ſpin the ſilk fit for making the Kien tcheou, we may make uſe of oak leaves. The late emperor Cang hi made a trial of it; one year, that he ſpent the ſummer and autumn at Geho, in Tartary, he made ſome ſilk-worms be fed with oak leaves.

Perhaps, if they would run the riſk of putting the houſe-ſilk-worms upon a young oak, ſome of them

would uſe themſelves to this ſort of life, as we ſee perſons that have been brought up in a tender manner accuſtom themſelves to the fatigues and food of a private ſoldier. Conſequently their young ones would be a wild kind, like thoſe that ſpin the ſilk which makes the Kien tcheou: at leaſt a trial might be made if the houſe-ſilk-worms would like theſe firſt tender leaves of the oak, and if ſo, the want of mulberry-trees, which are very backward ſome years, might be ſupplied.

The mulberry-tree is the next thing which the Chineſe author mentions, and we may reduce what he ſays to theſe following articles: which is the good or bad kind of the mulberry-trees; how they might be improved by the choice and cultivating of the ſoil, what art is neceſſary in collecting the leaves, in grafting the trees, and particularly in pruning them. Finally, what means muſt be taken to increaſe the good kind.

Thoſe mulberry-trees which ſhoot forth fruit before the leaves, are worth nothing, their leaves for the moſt part being very unwholeſome and ſmall, and beſides, that kind does not laſt long, and declines in a ſhort time.

In the choice of young plants, thoſe that have an uneven rind muſt be refuſed, becauſe their leaves will be ſmall and thin: on the contrary, thoſe that have a ſmooth and white rind muſt be choſen: large leaves will ſpring out of them, and in great quantities, and the worms that feed thereon will bring forth in the ſeaſon cods which are cloſe and full of ſilk.

Thoſe mulberry-trees that produce the leaſt fruit are the beſt, becauſe the juice is not ſo much ſeparated. There is a method to make them bear little fruit, and plenty of leaves; to do this, they give their hens mulberries freſh collected or dried in the ſun, after which the dung of theſe fowls is collected, and ſteeped in wa-

ter, then ſome mulberry-ſeed is ſoaked in this water, after which it is ſown.

The good mulberry-trees are divided into two ſorts, which are named from the province from whence they firſt came. Some are named King ſang; King is the name of a country in the province of Hou quang, their leaves are thin and a little pointed, and ſhaped like gourd leaves, but not ſo large; the heart of the trunk is ſolid, and the root is laſting; the worms produce a ſtrong ſilk that live upon theſe leaves, and is very fit for making the Cha or the Lo cha (which is a kind of thick gauze or crape. Worms newly hatched are above all things fond of the leaves of the King, for every age has a particular food ſuch as is the moſt pleaſing to it.

The mulberry-trees of Lou, an ancient name of the province of Chan tong, produce but few mulberries: their trunks grow tall, their leaves are ſtrong, large, thick, round, and full of juice; the branches are lively, and ſound, but the root and the heart are unſound, and do not laſt; though the leaves are always good, yet when they are pretty well grown, they are moſt proper to feed the worms with.

Among theſe ſorts of mulberry-trees there are ſome whoſe leaves ſprout out very early; theſe muſt be placed near the houſe, that the roots may be kept free of weeds, which muſt be watered and dunged in a dry ſeaſon, that provender may be at hand for theſe valuable inſects.

When they ſtrip the young trees of too many leaves before they are three years old, they feel afterwards the effects of it, they become feeble and backward: it is ſo with thoſe whoſe branches and leaves are not cut off ſmooth, which they lop after the leaves are quite ſtript off: they are in the greateſt perfection when they are three years old, but when the are five their

roots twiſt one within another, and they begin to decline. The cure for this is to open them about the ſpring, and cut the roots that are too much twiſted, and then ſpread them over with earth prepared for that purpoſe, which eaſily binds through the care which they take to water it.

There is a method of reviving them when they grow old, viz. by lopping off all the decayed branches, and ingrafting ſound ſhoots, whereby there is a juice conveyed through the whole body of the tree which animates it. The beginning of the ſecond moon, which anſwers to our March, is the time you muſt graft them.

To hinder theſe trees from growing weak, you muſt often examine whether certain worms have not made way into them, to depoſit their ſeed; they deſtroy theſe worms, by infuſing a little oil of the fruit of the Tong-tree: the ſame effect would undoubtedly be produced by any other ſtrong oil.

The ground fit for mulberry-trees ſhould neither be hard nor ſtiff: a piece of land, which has not been cultivated for ſome time, and has lately been broke up, is the propereſt for that uſe.

In the provinces of Tche kiang and Kiang nan, from whence the beſt ſilk comes, the ſoil is manured with mud, which they get out of the canals, that ſeparate the country, and are cleaned every year; aſhes and the dung of animals and ſilk-worms are made uſe of for this purpoſe. The little pulſe which they ſow between the trees does no harm to them, provided they take care not to plough up the earth near a tree, for the ſhare would be prejudicial to the roots.

But the chief and moſt uſeful thing is, to mind that the mulberry-trees be cut at a proper time, and by an able hand; this makes the leaves ſprout out the ſooner, and in greater plenty: theſe leaves are better nou-

riſhed, and of a taſte proper to encourage the appetite of the worms. You muſt not be afraid to thin the branches, and particularly thoſe in the middle of the tree, in order to leave a free and empty ſpace, and then the collector of the leaves being placed in the middle of the tree, ſtands much more convenient to reach them, and will collect more leaves in one day than another would do in ſeveral, who had not taken this precaution, which ſaves a good deal of coſt.

Beſides, the worms do not run the riſque of being hurt thereby; when they are hungry, their food is much ſooner prepared than if it was collected from a mulberry-tree as thick as a buſh: they make uſe of a ladder made with a prop, for the more eaſy collecting of the leaves all about the tree, whereby it is ſupported without reſting upon the mulberry-tree, for fear of doing harm to it. Our author ſays that a mulberry-tree well pruned, is worth and yields twice as much as two others that are not.

The time for pruning mulberry-trees is the month of January; they do it in the ſame manner as vines are done; it is enough that the branches which they leave have four knots, the ſurplus muſt be rejected: four parts of the branches are entirely cut off, viz. 1ſt, Thoſe which lean towards the root. 2d, Thoſe which ſprout inwards, and ſtretch towards the trunk. 3d, Thoſe that are forked, which come out two and two from the trunk of the tree, muſt be cut off. Laſtly, they cut off thoſe that are too thick and full of leaves, but in other reſpects grow very well.

Thoſe branches which ſprout outwards only muſt be left; they will look very freſh and lively the next ſpring, and thoſe leaves which are earlieſt will haſten the growth of the worm, and augment the profit of the ſilk.

Our author lays great ſtreſs upon the art of pruning the mulberry-trees, and very freely ſays, that the people of the province of Chan tong, who do not follow theſe rules, ſhould make a trial of this way, and not remain ſtubborn in their old method.

Mulberry trees ſhould be collected towards the end of autumn, before they grow yellow; they muſt be dried in the ſun, then beaten ſmall, and preſerved in a place that does not ſmoke, where they muſt be put into great earthen veſſels, whoſe mouths muſt be ſtopped with clay. In the ſpring theſe broken leaves will be reduced to a kind of flour, which is given to the worms after they have caſt their ſlough. I ſhall explain in proper order the good effect it cauſes, and the manner of giving it.

They take great care in the province of Kiang nan and Tche kiang, not to let the mulberry-trees grow too tall; they prune them that they may not grow above a certain height: the toppings which they carefully collect are of uſe, for the Chineſe can make a profit of every thing. 1ſt, In places where wood is not plenty, they uſe them for fuel to heat the water, in which they put the the cods of ſilk, that they may be the more eaſily ſeparated. 2d, They make a lye of the aſhes of theſe branches, into which they throw the cods which the butterflies have bored, and all others that are bad. With the aſſiſtance of the lye, in which they ſtew, they ſwell very much, and become proper to be ſpun for pack-thread, or to be prepared for wad, which ſerves inſtead of cotton. 3d, Some take the bark of theſe branches before they are burnt, of which they make a kind of paper, which is ſtrong enough to cover common umbrellas, eſpecially when it is coloured and oiled.

Care muſt be taken to renew the mulberry-trees when

they grow old, and their leaves become rank; beſides the method of renewing them by grafts, as I have before explained, they obtain new plants either by putting many of the ſound and freſh branches through little barrels made of two pieces of a great bamboo, which they fill with a good earth: or by bending ſome of the long branches down in the ſpring which they left in pruning time, and putting the end into earth prepared for that purpoſe; theſe branches will have taken root the December following; then they cut them neatly from the body of the tree, and tranſplant them in the ſeaſon.

They alſo ſow the ſeed of the mulberry-tree, which muſt be got from the fruit that grows on the midſt of the branches of the beſt trees. The aſhes of the branches which they burn muſt be mixed with the ſeed; the next day they ſtir it together in water; the ſeed that is not good ſwims on the top when the water is ſettled; that muſt be dried in the ſun which ſinks to the bottom, after which they ſow it with an equal portion of millet. The millet is of great uſe to the mulberry-tree, by protecting it from the heat of the ſun, for it ſtands in need of a ſhade at firſt. When the millet is ripe, they wait for a high wind, and then ſet it on fire: the mulberry-trees ſprout out with a good deal of more vigour the following ſpring.

They cut off the top of the plants when they are grown to a proper height, in order to make branches ſpring out on the ſides, but they cut off all the ſide branches till the tree is grown to a proper height, then theſe mulberry-trees muſt be tranſplanted into ſeveral lines about eight or ten paces diſtant from each other. They do not ſet the trees of one line facing thoſe of another; perhaps they imitate this irregularity that the trees ſhould not hide each other.

It is not enough to have managed the mulberry-trees

ſo that they afford a ſuitable food for the ſilk-worms, there muſt alſo be a proper habitation made for theſe valuable inſects, which muſt be adapted to their different conditions, and the time when they are engaged at work. Theſe ſkilful labourers, who contribute their ſubſtance to the delicacy and luxury of our furniture and garments, are worthy of being reſpectfully treated. The riches which they produce depends chiefly on the care which is taken of them; if they pine or ſuffer the work will accordingly grow leſs.

Some Chineſe authors have treated of a proper dwelling-place for the ſilk-worms, but they have wrote only for thoſe who follow an old ſettled manner, in regard to a ſmall quantity of ſilk compared to their capacities and leiſure, for almoſt every houſe raiſes ſilk-worms in ſome provinces. The author here cited, and who came to be one of the firſt miniſters of the empire, has completely handled the matter, and has only wrote for the great laboratories in which they are at a great expence, but are at laſt repaid with great intereſt.

Our author ſays, that a proper place muſt be choſen for the habitation of the ſilk-worms, it muſt be near a rivulet, upon a dry and riſing ground, for as it is proper that the eggs ſhould be often waſhed, running water is the propereſt for that purpoſe. It muſt be a retired place where this habitation is built, free from unwholeſome ſmells, cattle, and all noiſes: a noiſome ſmell, or the leaſt fright, have a great affect upon ſo tender a breed; even cocks crowing, or dogs barking are enough to put them into confuſion, when they are firſt hatched.

Build a ſquare chamber, which may be put to other uſes when the ſilk-worms are out of ſeaſon; as it is proper that the chamber ſhould be warm, you muſt take care that the walls be well built; the entrance

muſt never be towards the north, but to face the ſouth or ſouth eaſt; there may be four windows, one on every ſide the chamber, to let in air as there may be occaſion for it: Theſe windows, which are not often open, are made of a white and clear paper, becauſe there are ſome hours in which the light is proper, and others when it is not, therefore they make uſe of umbrellas over the ſaſhes for that purpoſe.

They alſo make uſe of theſe umbrellas to keep the place from pernicious winds, ſuch as the ſouth and ſouth-weſt winds, which ſhould never be permitted to enter; and as a cooling zephyr is ſometimes wanted, it is proper to open one of theſe windows, but if it is in a time when the air is full of gnats, it will certainly deſtroy the worms; they make blemiſhes on the cods of ſilk if they fall upon them, which makes them very difficult to wind; the beſt method, and that which is moſt uſed to prevent this, is to haſten the work before the gnats come. They keep good cats to guard the entrance of the chamber againſt the little lizards and rats, which would devour the ſilk-worms.

It is of great importance, as ſhall be made appear hereafter, that the eggs be hatched all at the ſame time, and that the worms eat, ſleep, wake, and caſt their ſlough together, and for this end the chamber muſt be kept always of an equal and conſtant heat. The manner our author propoſes is to build four little ſtoves, to keep fires in the four corners of the room, or elſe to have a good portable fire-pan, which muſt be moved about the chamber, and taken away when it is thought proper; but this fire-pan muſt be lighted out of the chamber, and buried under a heap of aſhes, for a blue or red flame would do harm to the worms.

Our author alſo requires that the fuel ſhould be cow-dung which warms the chamber; he adviſes to collect

it in the winter, to ſoften it in water, and to make it into bricks, to be dried in the ſun. Theſe bricks muſt be put upon pieces of hard wood, with which the bottom of the ſtoves are covered; this fuel being lighted, cauſes a gentle warmth, which is very neceſſary for the worms, they being alſo fond of the ſmell of the dung; but great care muſt be taken not to let any ſmoke be in the chamber, for the worms cannot endure it; this fire laſts a good while under the aſhes, which is a great advantage. Finally, it is proper that the outſide of the door be covered with a double matt, to keep out the coldneſs of the air, and to defend the place from any damp, otherwiſe there is little gain to be expected.

The next thing is to ſupply this place with the utenſils proper for the ſupport of the ſilk-worms: Nine or ten ſtories of ſhelves muſt be made at the diſtance of nine inches from each other; a kind of net-work made of ruſhes is put upon theſe, the holes of which are large enough to admit the little finger, that the warmneſs of the place may penetrate them the more readily, and that they may the ſooner grow cold; theſe ſeveral ſtories muſt be erected in ſuch a manner as to leave a free paſſage round, and a clear ſpace in the middle: The worms are hatched upon theſe ruſhes, and nouriſhed here till they are fit to ſpin, but then the ſcene alters.

In ſhort, theſe ruſhes being the cradle as it were of theſe very tender inſects, they put a kind of bed upon them, that is to ſay, they cover them over with a lay of ſtraw cut ſmall, upon which they put a long ſheet of paper that has been made ſoft with gentle handling; when the ſheet has been made dirty with their dung, or with the remnants of their meals (for they never eat the fibres of the leaves) they ſpread a net over it,

having meſhes which yield a free paſſage; they put mulberry-leaves upon this net, the ſmell of which inſtantly entices the hungry worms, then they take the net off carefully, and place it upon a new bed, whilſt they make the old one clean, that it may ſerve again.

Theſe are the cautions to be taken for the ſilk-worms' habitation. Our author alſo adds, that there ſhould be a thick hedge, or a wall, about the chamber, pretty near it, particularly on the weſt ſide, that the ſetting ſun may not ſhine upon the ſilk-worms when they are obliged to let in the air on that part.

He adviſes you to make uſe of a bag-net, which opens and ſhuts like a purſe, when you collect the mulberry-leaves, that they may not be ſhut too cloſe, and that they may not wither and their moiſture be dried up in carrying them.

As the worms ſhould have a more nice and prepared food when firſt hatched, he ſays that the leaves muſt be cut into ſmall thin threads, and that for this uſe a very ſharp knife muſt be uſed, which may not cruſh the leaves in cutting them, and which may leave all the agreeable taſte.

We often find that plants degenerate, and that the original is better than the ſeed; it is much the ſame with the butterflies, there are ſome languiſhing and feeble, a good brood is not to be expected from theſe, it is therefore proper to chooſe them; this choice is made at two particular times.

Firſt, The time to diſcern the males from the females is before they go out of their cods; the mark they diſtinguiſh them by is this, the cods that contain the male butterflies are a little pointed, fine and cloſe, and not ſo large as the others; the cods that contain the females are rounder, larger, and thicker, and not

ſo neat: Thoſe cods are beſt that are for the moſt part clear, and a little tranſparent, clean and ſolid.

Second, The ſafeſt way to make this choice is after the butterfles are come out, which is after they have been retired fourteen days; you muſt not chooſe thoſe to multiply the ſpecies which come out a day before the others, but thoſe which come out the next day in great numbers, and the lateſt muſt alſo be refuſed. This is another mark in which you cannot err; the butterflies that have bald eye-brows, bended wings, a reddiſh body, and a dry tail, and not hairy, muſt not be taken to increaſe the breed.

When this choice is made, they bring the males and females together, which they put upon ſeveral ſheets of paper, that they may couple. This paper muſt be made of the bark of the mulberry-tree, and not of hemp; they muſt be ſtrengthened with ſilk or cotton threads made faſt on the back ſide, becauſe they muſt be three times dipped in water when they are covered with eggs, which is proper to preſerve them: Theſe ſheets of paper muſt be extended upon mats covered with ſtraw; after the butterflies have been together about twelve hours, the males muſt be taken away; if they were to be together any longer, the eggs which they would bring forth being later, could not be hatched with the others, which diſadvantage ſhould always be ſhunned: The male butterflies muſt not be put into the ſame place with thoſe which were refuſed in the beginning.

It is proper to give the females room, and cover them, that they may lay their eggs more advantageouſly, for darkneſs prevents them from diſperſing their eggs: They muſt be kept covered four or five days after they have done laying, after which all theſe butterflies, with thoſe which were ſet aſide, or which were

aken dead out of the ſhells, muſt be buried deep in arth, for if any beaſt or fowl ſhould eat any, it ould kill them: Some ſay that no brambles, or any ther prickly plant would grow in the places of that eld in which they were buried for many years: Others put them into fiſh-ponds, and they ſay there is othing better to fatten the fiſh.

As to the precious ſeed that continues ſticking upn the ſheets of paper, ſome of it muſt ſtill be thrown way; for example, thoſe eggs which ſticking togeher make a kind of clods; we muſt expect ſilk from he others, and great care muſt be taken of theſe: Upon which my author is ſurprized, that the worms eing ſo ſenſible of the leaſt coldneſs or moiſtneſs of he air, their eggs are quite the reverſe, they being he better for ſnow and water: Would not one imagine, ſays he, that their natures are not the ſame? He ompares the alterations which the worms go through, which ſucceſſively become ants, caterpillars, and then utterflies, to the alterations which happen in order to lants by the ſpreading of their parts, which in one ituation are ſolid, and in another grow wider, ſome of which decay and drop off as ſoon as others appear n their full ſtrength.

The firſt thing which muſt be obſerved is to hang up theſe ſheets covered with eggs on the beam of the chamber, which in the front muſt be open, ſo that the air may come in, without the ſun ſhining on them; that ſide of the ſheet muſt not be turned outwards on which the eggs are laid; the fire muſt neither ſmoke nor blaze which warms the room; you muſt alſo be careful that no hempen ropes be near either the eggs or worms. Theſe cautions are not recited without reaſon. They roll up the ſheets looſely, ſo that the eggs be within the ſheet, after they have been hanging

for ſome days, and then they are hanged up again in the ſame way during the ſummer and autumn.

The end of December, or in January, which is the eighth of the twelfth moon, when there is an intercalary month, they put the eggs into cold river water, if they can get any, or in water in which a little ſalt has been diſſolved, being cautious that this water does not freeze; the ſheets are left there two days, and they keep them down to the bottom of the veſſel, by putting a china diſh over them, leſt they ſhould ſwim. After having taken them out of the water, they hang them up again, and roll them a little tighter, when they are dry, and cloſe them ſingly, ſtanding on one end in an earthen veſſel; after that, in about ten days, when the ſun ſhines very clear, they lay the ſheet open to its rays in a place that is ſheltered where there is no dew; they ſuffer them to be expoſed to the ſun about half an hour, and then roll them up in the ſame manner as before.

There are ſome who do not uſe this cuſtom; they put the ſheets mixed with the aſhes of the mulberry branches into water, and after they have been in a day or two they take them out to ſink them a ſhort time in ſnow-water, or elſe hang them three nights on a mulberry-tree, to receive the ſnow or rain, if it be not too ſevere.

Theſe baths procure a ſilk eaſy to be wound, and help to make it thicker, ſtronger, and not ſo porous, whether made of a kind of lye and ſnow-water, or of river-water, or water mixed with ſalt: Their chief uſe is to preſerve their internal heat, in which their prolific virtue conſiſts.

When the young leaves begin to ſprout out of the mulberry-trees, it is time to think of hatching the eggs, for they haſten or keep them back according to the dif-

ferent qualities of cold or heat which they give them; they haſten them if they often lay the ſheets open to to the ſun, and if in ſhutting them up they roll them up looſely; by doing the contrary they keep them back.

As it is proper that the worms ſhould all be hatched at the ſame time, this ſhould be done the three laſt days before they are hatched; the eggs ſwell, and grow a little pointed, when they are ready to come out; the firſt three days about ten or eleven o'clock, when the ſky is ſerene, and there is a little wind, as there commonly is at this ſeaſon, theſe valuable rolls of paper are taken out of the veſſel, opened to the whole length, and hung up ſo that the ſun may ſhine on the back of the ſheets, which continue in the ſun till they get a moderate heat; then they are wrapt up tight, and put endways into the veſſel in a warm place till the next day, when they are are again taken out, and treated as they were the firſt day.

The eggs will be perceived to change to an aſh colour the ſecond day; then they put two ſheets together, and roll them up very tight, tying the ends; they open the ſheets towards the end of the third day, and ſtretch them on a fine mat, and the eggs then ſeem blackiſh; if there are any worms hatched they muſt be thrown away, as they would never be like the others; for practice informs us, that the worms which are firſt hatched never are like the others in the time of caſting their ſloughs, of eating, working, nor what is moſt material, of making their ſilk; theſe irregular worms would very much increaſe their care and trouble, and occaſion a loſs by this diſorder, wherefore they are diſperſed betimes; they being thus ſeparated, they roll three ſheets very looſely together, and carry them to a

very warm place, that is protected from the south wind.

They take out the rolls about ten or eleven o'clock the next day, and upon opening them find them full of worms resembling black ants, and are named He y; the eggs must be forsaken that are not hatched an hour afterwards; all the young worms must be thrown away that have a flat head, or that are shrivelled, and appear as if they were scorched, or that are of a sky-blue, flesh, or yellow colour; the good kind are of a colour resembling a mountain at a distance.

The first thing to be done is to weigh the sheet which contains the worms newly hatched, afterwards holding this sheet sloping and turned almost upside down upon a long sheet of paper strewed with mulberry-leaves, and prepared in the forementioned manner, the smell of these leaves will attract the young famished worms, but those which are the most sluggish must be helped down with a hen's feather, or by striking gently the back of the sheet; immediately after they weigh the sheet by itself to know exactly the weight of the worms, by which they regulate the quantity of leaves that is necessary for the nourishment of these worms, and also the weight of the cods which they shall produce, if no accident befals them.

The present concern is to make these worms observe a good regimen, and to give their lodging a convenient heat; for this purpose they provide an affectionate mother for the worms, who is careful to let them never be in want; our author calls her Tsan mou, mother of the worms.

She takes possession of the chamber, but not till she has washed herself, and put on clean clothes, which have no bad smell; she must not have eaten any thing immediately before, or have handled any wild succory,

the ſmell of which is very hurtful to theſe tender creatures; ſhe muſt be cloathed in a plain habit, without any lining, that ſhe may the more ſenſibly feel the warmth of the place, and accordingly increaſe or leſſen the fire, but ſhe muſt be very cautious of not making a ſmoke or raiſing a duſt, which would be very offenſive to the tender nature of theſe inſects, which muſt be carefully humoured before the firſt time of caſting their ſlough. Every day is a year to them, ſays our author, and has in a manner the four ſeaſons, in morning, mid-day, evening, and night.

The following general practical rules, founded upon experience, muſt be obſerved. 1. The eggs muſt be kept very cold all the time they are preſerved before they are hatched. 2. They require a great heat when they are hatched, and are like ants. 3. A moderate heat is required when they are grown caterpillars, and towards the time of their caſting their ſlough. 4. They muſt be kept cool after the great moulting. 5. They muſt be heated by degrees when they are upon the decline, and growing old. 6. When they ſpin, they require a great heat.

The delicacy of theſe little inſects requires that great care ſhould be taken to keep every thing out of the way which might incommodate them, for they have their diſtaſtes and antipathies; they more eſpecially diſlike hemp, leaves that are moiſt or heated by the ſun, duſt raiſed by ſweeping when they are newly hatched, the moiſture of the earth, flies and gnats, the ſmell of broiled fiſh and burnt hair, muſk, ſmoak, the breath which ſmells of wine, ginger, lett ce, wild ſuccory, all great noiſes, fluttery, the rays o the ſun, the light of a lamp, whoſe quivering flame muſt not ſhine in their eyes during the night-time, the wind which comes through the crevices and chinks of the

chamber, a great wind, cold, heat, and eſpecially a ſudden change from very cold to very hot weather: Theſe inſects are very much hurt by all theſe things.

The principal cauſe of their diſeaſes is the feeding of them with leaves covered with dew, thoſe which have been dried in the ſun or in a high wind, or thoſe which have received any ill taint: The leaves ſhould be gathered two or three d ys beforehand, and kept in an open, clean, and airy place, remembering to give them at firſt the tendereſt leaves cut into very little threads.

Three or four days after, when they begin to turn white, their food muſt be increaſed in quantity, and not be cut ſo ſmall; they afterwards become blackiſh, when they muſt have a greater quantity of leaves, and as they are gathered from the tree. When they become white again, and eat with leſs appetite, do not give them ſo much at a meal; afterwards they turn a little yellow, and then they muſt have a leſſer quantity of food; then they become quite yellow, and are, according to the Chineſe language, at the *eve of one of the three ſleeps*, that is to ſay, they are ready to caſt their ſlough, then give them nothing; every time they caſt their ſlough they muſt be thus managed, according to their bigneſs.

The following account is more exact than the former; Theſe worms eat the ſame in the night as in the day; the day after they are hatched they muſt be fed forty eight different times, twice every hour; the ſecond day thirty, but the leaves muſt not be cut ſo ſmall; the third day they muſt have ſtill leſs; theſe little inſects are then like new-born children, who would always be at the breaſt, and pine without it; if their food was not proportioned to their appetites they would be overheated, which would deſtroy the

moſt promiſing hopes: Some think it beſt to give at firſt leaves which ſome healthy perſons have kept for ſome time in their boſoms, the perſpiration of a human body agreeing very well with theſe young worms.

At their meal-times their food muſt be ſpread every where alike; cloudy and rainy weather take away their ſtomach, you muſt therefore immediately before their repaſt light a wiſp of dry ſtraw, which muſt be all of a light, then hold it over the worms to deliver them from the cold and moiſture which benumbs them; this ſmall help ſharpens their appetites, and prevents diſeaſes; a ſtrong light contributes likewiſe to this, therefore they pull up the umbrellas of the windows in the day time.

The reaſon of their being ſo careful to make theſe inſects eat ſo often is, becauſe it forwards their growth, and cauſes them to ſpin the ſooner; upon this care depends the great profit which they expect from theſe creatures. If they come to their full growth in twenty three or twenty five days, a hurdle covered with worms, whoſe weight at firſt was a Mas, that is, not much more than a dram, will produce twenty five ounces of ſilk; whereas, if for want of proper care and and nouriſhment they do not come to their perfection in leſs than twenty eight days, they will produce no more than twenty ounces, and if they are a month or forty days in growing they will have but ten ounces.

Feed them frequently when they begin to grow old, and do not give them too much at a time, in the ſame manner as they are uſed when young; if they did not digeſt their food in the time when they begin to ſpin, the cods would be wet and ſoaked with a ſalt water, which would render the ſilk very difficult to be wound; in ſhort, when they have been hatched twenty four or

twenty five days, the longer they are before they ſpin the more leaves they conſume, the leſs ſilk they produce, and the mulberry trees, by reaſon of being too much ſtript of their leaves before the ſeaſon, will bud later the year following.

You muſt give them often little leaves, after they have caſt their ſlough, and but few at a time; this is like a ſecond birth, or, according to other authors, a ſort of recovery. When the worms, ſays he, are juſt upon caſting their ſlough, they reſemble a ſick man when ſome great change is expected, and death ſeems to be approaching, but if he can ſleep a night, he becomes quite another man, and nothing remains but to recover his former ſtrength by a moderate diet.

But there are other diſeaſes which muſt be prevented or cured, and which are occaſioned either by cold or too much heat; to prevent the diſeaſes occaſioned by cold, a juſt heat muſt be kept in the chamber where they are; if notwithſtanding theſe precautions the cold has ſeized theſe little labourers, either for want of the windows being ſhut down cloſe, or becauſe the mulberry leaves were not well dried, it deſtroys their appetite and cauſes a ſort of flux, for inſtead of hard excrements they void a watery ſlime, and then you muſt burn cows' dung near thoſe that are out of order, but without making any ſmoak; the ſmell of this burnt dung revives them more than one can imagine.

The diſorders which proceed from too much heat are occaſioned either by not giving them their food in a proper time, or by the quality and quantity of their food, or by an improper ſituation, or by the air becoming ſuddenly very hot: In this laſt caſe they open one or more of the windows, but never on the ſide from which the wind blows, for it muſt not come in a direct line into the chamber, but by a circuit, that it

may be qualified; for inſtance, if it is a ſouth wind they open the window towards the north; and if the wind is too hot, they ſet a veſſel full of cold water before the door or window, that it may be cooled in its paſſage; they likewiſe ſprinkle the chamber with cold water, and you muſt be very cautious in doing this that not the ſmalleſt drop fall upon the worms.

When a too great internal heat cauſes their diſorders, they are cured by giving them a kind of meal made of mulberry leaves, gathered in autumn, and reduced to a very fine powder, as before ſhewn. They moiſten the leaves deſigned for this repaſt, and ſtrew under them this meal, which ſticks to them, but they diminiſh the quantity of leaves according to the meal which they add; for inſtance, if they mix four ounces of meal, they reduce four ounces of leaves: There are ſome who ſay that the meal of certain little green peaſe, which are eaten for a cooling diet, may ſerve inſtead of the leaf-powder; it certainly refreſhes thoſe worms that eat it readily, and makes them grow ſtronger.

Heats are frequently occaſioned by their being crouded together, which make the worms ſick, and this diſtemper is the moſt common and the moſt dangerous; they muſt not be confined but whilſt they are in the egg, for they require a great deal of room as ſoon as they are hatched, eſpecially when they are grown caterpillars, becauſe they abound in moiſture. Theſe inſects are greatly hurt when they are not kept clean, altho' they are very naſty in themſelves; they ſoon make a vaſt quantity of filth, which is not long in fermenting, and heats them conſiderably, if they are not carefully freed from it, either by ſweeping it off with a feather, or, which is better, by carrying them frequently from one hurdle to another.

After they are pretty much grown, and are going

to caſt their ſlough, they require theſe changings more than before, but then ſeveral perſons muſt be employed, that the worms may be all removed at the ſame time; they muſt be handled very gently, and not let fall, nor be ſet down roughly, which would make them grow weaker, and more lazy in their work; the changing of the hurdle is alone ſufficient to cure their diſorders. To give a ſpeedy relief to the ſick, throw ſome dry ruſhes or cut ſtraw upon them, and ſtrew ſome mulberry leaves over this: They riſe to eat, and by that means get out of their ordure, which heats them.

The ſucceſs of theſe removals depends upon their being frequently repeated, taking an equal care of all the worms, and on doing it gently, giving them more room every time. When they are a little grown, the worms on one hurdle muſt be put upon three freſh ones, then on ſix, and ſo increaſing to the number of twenty and upwards. Theſe inſects being full of humours muſt be kept at a proper diſtance from each other.

But the greateſt caution is neceſſary when they are removed, that it be at the right inſtant of time; an apartment muſt be prepared for their work when they are of a ſhining yellow, and ready to ſpin: My author propoſes a kind of rough frame of joiners' work, or a long roof, the ſides of which muſt be almoſt upright, and the inſide hollow; this muſt be divided all round into ſeveral partitions, to each of which there muſt be a ledge where the ſilk-worms are to be placed, and where they will range themſelves in order; this machine muſt be hollow, that a man may conveniently go in without diſplacing any thing, to keep up a ſmall fire, which defends the worms from moiſture and cold, which are very hurtful at this time; I ſaid a ſmall fire, becauſe

there muſt be juſt ſufficient to procure a gentle warmth, which makes the worms more active in their work, and the ſilk more tranſparent. This large army of worms, being thus ranged in their apartment, muſt be ſurrounded with mats at a little diſtance, which muſt alſo cover the top of the machine to keep off the cold air, and becauſe the worms love to work privately and in the dark.

Nevertheleſs after the third day of the work the mats are taken away from one o'clock to three, and they give the ſun a free entrance into the chamber, but in ſuch a manner that the rays may not ſhine upon theſe little labourers; after this time they are covered as before. When it happens to thunder, they muſt be preſerved from the ill effects of the noiſe, and the lightning, by covering them with the ſheets of paper which were uſed when they were upon the hurdles.

In ſeven days time the work of the cods is finiſhed, and the worms quit their ſilken lodging in about ſeven more, and appear on their coming out in the ſhape of butterflies; when theſe cods are gathered it is a common way to put them in heaps, it being impoſſible to wind off all the ſilk immediately, becauſe the time is taken up with other employments; yet there are ſome inconveniences in this method, for if there is any delay made in chuſing out of the heap of cods thoſe that are deſigned to increaſe the ſpecies, the butterflies having been ſqueezed and heated in the heap would not be ſo proper for this purpoſe; the females eſpecially that had received any hurt would lay none but ſickly eggs, therefore the cods deſigned for the multiplication of the ſpecies muſt be ſet apart, and laid looſe upon a hurdle in a cool airy place.

As to the vaſt number of the other cods, which muſt be preſerved from being bored by the butterflies, you

muſt contrive how to kill them without hurting the work; they muſt be put by little and little into the kettle, as they are wound off, for if they were to ſoak too long it would do harm to the ſilk; it would be beſt to wind them off all together, if a ſufficient number of hands could be employed; my author affirms, that five men can wind off thirty pounds of cods, and ſupply two others with as much ſilk as they can make into ſkains, that is about ten pounds; but as that cannot always be done, the following methods may be uſed to preſerve the cods from being bored.

The firſt method is to let them lie in the ſun a whole day; this certainly kills the butterflies, but the heat of the ſun is prejudicial to the ſilk.

The ſecond is to put them *in balneo mariæ:* Some reckon it uſeful to throw an ounce of ſalt, and half an ounce of oil of turnips into the copper, imagining that the exhalations impregnated with the acid ſpirits of the ſalt, and the ſulphureous particles of the oil, make the cods better, and the ſilk more eaſy to divide; therefore the machine where the cods are muſt go entirely into the copper, the top of which muſt be covered and luted ſo that no ſteam may get out: But if this bath is not rightly ordered, in which ſeveral are miſtaken, a great number of the butterflies will bore their cods; it muſt therefore be obſerved, 1. That the ſtrong and hard cods have generally the outſide of their ſilk coarſer, and of courſe more eaſy to be divided, and for the ſame reaſon may be left longer *in balneo mariæ;* the contrary muſt be obſerved of thoſe that are thin and ſmall. 2. That when the butterflies are killed *in balneo mariæ* the cods muſt be ſpread upon mats, and when they are a little cooled they muſt be covered with ſmall branches of willow or mulberry trees.

The third way of killing the butterflies, preferable

to the two former, is as follows: Put the cods into large earthen veſſels, and in all theſe veſſels throw four ounces of ſalt over every ten pounds of the cods, and cover them with large dry leaves like thoſe of Nenuphar; lay ten pounds more of cods upon theſe leaves, ſprinkled with four ounces of ſalt as before, filling the veſſel with ſeveral lays; then cloſing the mouth of it, ſo that the air may be entirely excluded, the butterflies will be killed in ſeven days, but if the leaſt air is admitted, by any chink, they will live long enough to pierce their cods; as they are of a porous ſubſtance, that readily imbibes the air, the leaſt quantity getting in would keep them alive.

When you lay theſe cods in the veſſels, the fineſt muſt be ſeparated from the coarſer; the cods that are long, white, and ſhining, give a very fine ſilk; thoſe that are large, dark, and bluiſh, like the inner ſkin of an onion, produce a coarſer ſilk.

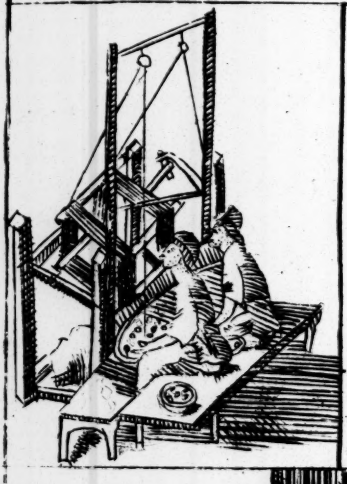
Hitherto I have treated only of the method of raiſing worms in the ſpring, and indeed it is in this ſeaſon that the generality of the Chineſe are employed in this work; nevertheleſs ſome hatch eggs in the ſummer and autumn, and almoſt in all the months after the firſt produce of the ſpring; but for this purpoſe they muſt provide workmen who are able to ſuſtain ſuch a continual labour, and mulberry trees to ſupply neceſſary food through all the ſeaſons; but the mulberry trees would hardly ſuffice, for if they are quite ſtript one year they die and fail entirely the following ſpring.

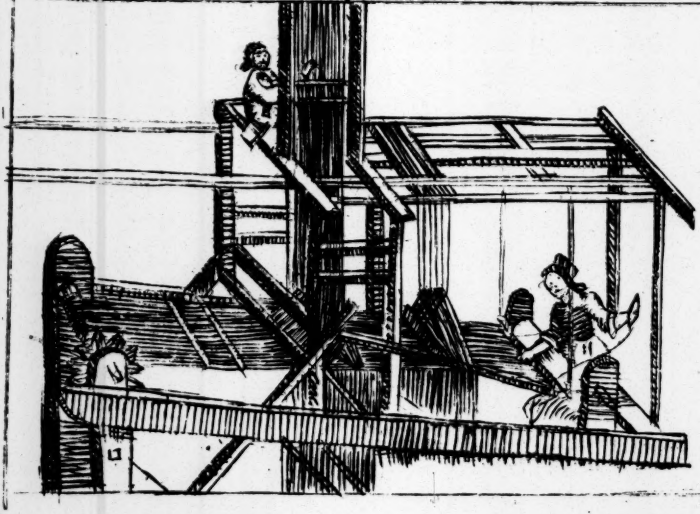
The beſt way, ſays my author, is to hatch but few worms in ſummer, and only to provide eggs for autumn: He likewiſe cites an author who adviſes to raiſe worms in that ſeaſon, which commences about the fifteenth of Auguſt, but he would have only taken for

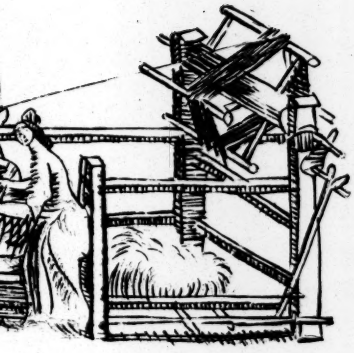
their food the leaves of thoſe branches that may be ſpared without injuring the tree. The following are his reaſons why autumn is preferable to the ſpring for raiſing worms: 1. Becauſe the ſpring being for the moſt part rainy and windy in the ſouthern countries, the profit expected from the labour of theſe worms is more uncertain; whereas in autumn, the weather being generally ſerene, there is a greater certainty of ſucceſs. 2. That although the worms cannot have ſuch tender leaves for food as in the ſpring, yet this is fully compenſated by having nothing to fear from gnats and muſketoes, the ſting of which kills the worms.

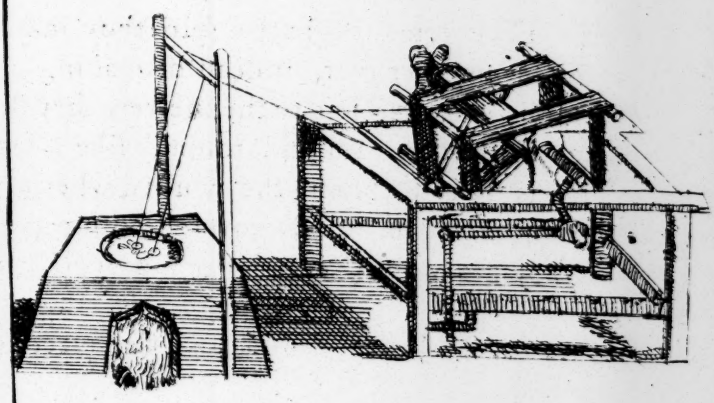
When you raiſe any ſilk-worms in ſummer they muſt be kept cool, and the windows covered with gauze, to keep out the gnats. If any are raiſed in autumn, they muſt be kept cool at firſt, but after they have caſt their ſlough, and when they ſpin, they muſt be kept warmer than in the ſpring, the nights being colder; when theſe autumnal worms become butterflies, they may lay eggs for the next year, yet it is eſteemed the ſureſt way to make a proviſion in the ſpring, becauſe thoſe of autumn do not always anſwer.

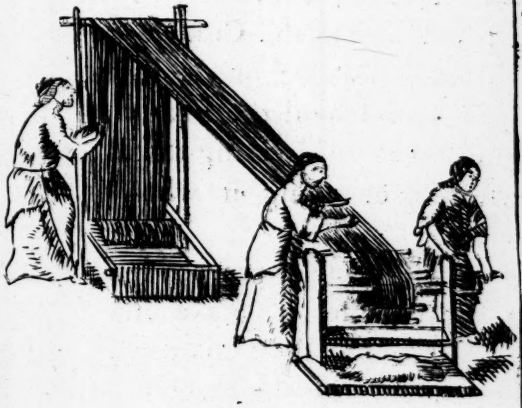
When any of the ſummer eggs are preſerved to be hatched in autumn, they muſt be put into an earthen veſſel well covered, ſo that nothing may get into it; put this veſſel into a large baſon of cold ſpring-water as high as the eggs incloſed, for if the water was higher it would periſh the eggs, and if it was lower many would not have ſtrength to hatch with the reſt; if they ſhould happen to hatch later they would either die or make a bad ſort of cods; the eggs will hatch in twenty one days, if you ſtrictly obſerve theſe directions. Some think it does as well, and hatches them as ſoon, to ſet them in the ſhade under ſome tree that is very thick

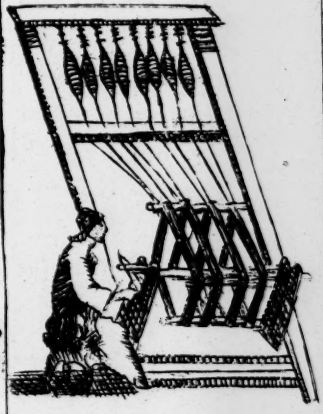


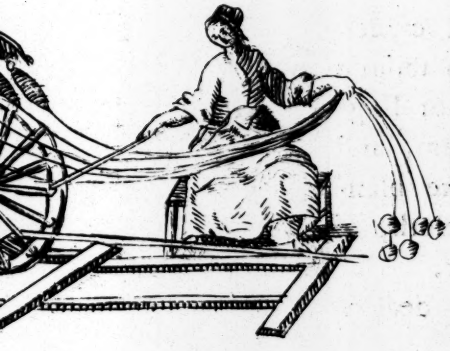


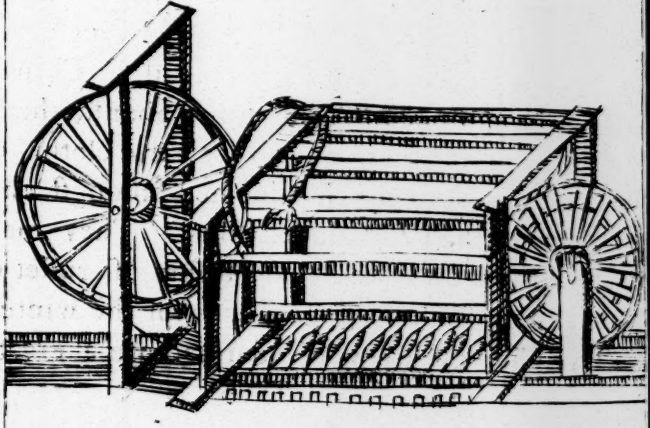












of branches, incloſed in a veſſel made of earth without baking.

When the ſilk-worms begin to ſpin they may be placed in ſuch a manner that, inſtead of making cods as they naturally do when left to themſelves, they ſhall make a piece of ſilk flat, thin and round, like a large wafer. This is done by laying the worms, when they ſpin, on the top of a cup exactly covered with paper.

Many advantages would accrue from a work thus carried on.

1. You may divide theſe round and flat pieces as eaſily as the cods.

2. They are all pure ſilk, having none of that viſcous matter which the worm emits in the ſhell upon being long incloſed in it, and which the Chineſe call urine, for the work is taken away as ſoon as it has done ſpinning, otherwiſe it would ſpoil the ſilk.

3. You need not be in a hurry in dividing the ſilk, which is quite the reverſe way of doing it when in cods.

As ſoon as the ſilk is wound off they prepare it for the loom. The tools which the Chineſe make uſe of for this work are very ſimple; but as theſe matters are better explained by draughts, than by the exacteſt deſcription, you have here a view of the ſeveral machines employed to compleat thoſe elegant and valuable ſilks which the Europeans get from the Chineſe.

Although wool is very plentiful in China, eſpecially in the provinces of Shenſi and Shanſi, which abound with ſheep, yet they make very little cloth; our Engliſh cloth is very much eſteemed amongſt them, and ſells dearer than the richeſt ſilks. They make blankets of their own wool, and a ſort of ruſſet cloth, of which their ſtudents have gowns for the winter.

The Chineſe likewiſe manufacture a great deal of

cotton, and make a kind of linen of a plant called Co, found only in the province of Fokien. It is a ſort of creeping ſhrub, (probably a ſpecies of cotton) whoſe leaves are round, ſmooth, and green within, but whitiſh and downy on the outſide. Some of the ſtems grow as thick as one's finger, which are pliable, and downy like the leaves. When it is gathered, bundles of it are put into water, as we do hemp; and, the outer ſkin being peeled off and thrown away, they divide the inner, which is much more fine and delicate, into very ſlender filaments, which are manufactured into a ſort of linen, remarkable for its lightneſs and coolneſs; and accordingly the people of faſhion wear veſts of it in ſummer.

The number of books in China is immenſe, as they have known the noble art of printing for many centuries, whereas it has been diſcovered in Europe but of late years; but it is very different from that in uſe amongſt us.

Our alphabet conſiſting but of a few letters, which by different combinations can make the largeſt volumes, there is no need of caſting a great number or characters, ſince thoſe which were uſed for the firſt may be uſed again for the ſecond and following ſheets: but the number of the Chineſe characters being almoſt infinite, it is impoſſible to caſt ſo prodigious a number, and if they were made, the greateſt part would be of very little uſe.

Their manner of printing is thus: They get their work tranſcribed by a good writer upon a fine, thin, and tranſparent paper; the engraver paſtes every ſheet upon a plate of apple or pear-tree wood, or of any other, if it is but hard and ſmooth, and with a graver follows the traces, and carves out the characters by cutting down the reſt of the wood; ſo he makes as

many different plates as there are pages to print, working off as many copies as are required, and at any time more may be worked off without compoſing anew; there is not much time loſt in correcting the proofs, ſince as the engraver works from the copy, or the original of the author, he cannot poſſibly make any errors, if there be none in the copy itſelf.

This manner of printing is convenient, becauſe they print the ſheets as they ſell them, and do not run the riſque of ſelling but half the copies. Moreover, after having thrown off thirty or forty thouſand copies, they can eaſily retouch the plates, and make them ſerve for ſeveral more impreſſions.

The Chineſe is not the only language they print; they likewiſe do books in all ſorts of languages: The beauty of the character depends upon the hand of the copyiſt; the ſkill of the engraver is ſo great, that the copy which is printed cannot eaſily be diſtinguiſhed from the written one, ſo that the impreſſion is good or bad according to the ability of the writer employed; this muſt be underſtood of our European characters, which are engraved and printed by the Chineſe; as for the Chineſe characters, which are engraved, the engraver frequently corrects the defects of the writer.

Our European manner of printing is nevertheleſs not unknown in China; they have moveable characters like ours, the only difference is that ours are of metal, and theirs of wood. It is with theſe that they amend every quarter of a year the ſtate of China, which is printed at Peking: I have heard that at Nanking and Sou tcheou they print in this manner ſome little books, as neatly and as well as thoſe which are engraved by the beſt hands. This is credible, becauſe it only requires a little more pains and care.

In urgent affairs, as when an order comes from

court, which contains many articles, and which muſt be printed in one night, they have another method of engraving: They cover a plate with yellow wax, and trace out the characters very quickly.

They do not uſe a preſs, as we do; the plates which are made of wood, and the paper which has not been dipped in allum, would not bear it; but when once the plates are engraved, the paper cut, and the ink in readineſs, one man with his bruſh, and without fatigueing himſelf, may print every day near ten thouſand ſheets.

The plate they are uſing muſt be ſet level and firm; they have two bruſhes, one harder than the other, which are to be held in the hand, and which may be uſed at both ends of the handles; they dip one a little in the ink, and rub the plate with it, but ſo that it may not be too much nor too little moiſtened; if it was too much the letters would be blotched; if too little the characters would not print. When the plate is once in order they can print three or four ſheets without dipping the bruſh in the ink.

The other bruſh muſt paſs gently over the paper, preſſing it down a little that it may take up the ink; this is eaſily done, becauſe not being dipped in allum it preſently imbibes it. You muſt paſs the bruſh over the ſheet more or fewer times, and preſs upon it according as there is more or leſs ink upon the plate: This bruſh muſt be oblong and ſoft.

Their printing-ink is a liquid, and is much more ready than that which is ſold in ſticks. It is made of lampblack well beaten, and expoſed to the ſun, and then ſifted through a ſieve; the finer it is the better; it muſt be tempered with *aqua vitæ* till it come to the conſiſtence of ſize, or of a thick paſte; care muſt be taken that the lampblack may not clod.

After this it muſt be mixed with water till it comes to a proper conſiſtence, neither too thick nor too thin. Laſtly, to hinder it from ſticking to the fingers they add a ſmall quantity of glue, much of the ſame kind as that made uſe of by the joiners, melting it over the fire, and pouring on every ten ounces of ink about an ounce of glue, which they mix well with the lampblack and *aqua vitæ* before they are tempered with the water.

They print on no more than one ſide, becauſe their paper is thin and tranſparent, and would not bear a double impreſſion without confounding the characters; hence it is that every leaf of the book is folded, the fold being at the edge of the book, and the opening at the back, where they are ſown together; ſo that their books are cut at the back, whereas ours are cut at the edges.

They do not gild upon the edges, nor ſo much as colour them. The ordinary books are covered with a grey paſteboard, handſome enough. They bind the better ſort in a fine ſattin, or a kind of flowered taffety, that is very cheap, and is commonly made on purpoſe for this uſe. Some they cover with rich ſilk, flowered with gold and ſilver; the form is always the ſame, but they are at coſt, according to the matter they are willing to employ.

The Chineſe neither write with pens like the Europeans, nor with canes or reeds like the Arabians, nor with a crayon like the Siameſe, but with a pencil made of the hair of ſome animal, eſpecially of rabbets, which is the ſofteſt.

In writing they do not hold the pencil obliquely as painters do, but perpendicularly; they write from the top to the bottom, and begin like the Hebrews from the right to the left, ſo that the end of our book is the beginning of theirs.

The materials of the Chineſe paper, and the way of preparing them, being different from thoſe in Europe, it is neceſſary to give an account of this amongſt other curious manufactures of this country. The Chineſe paper, it muſt be obſerved, is of divers kinds; ſome made of the rinds or barks of trees abounding in ſap, as the mulberry tree and elm, but chiefly of the bamboo and cotton tree. In reality, almoſt every province has its ſeveral paper; that of Sechwen is made of hemp, that of Chekiang of wheat or rice ſtraw, that of Kyangnan of the ſkin found in the balls of ſilk-worms, that of Fokien of ſoft bamboo, and the bark of the mulberry tree furniſhes the paper uſed in the northern provinces.

As to paper made of the bark of trees, the manner of their preparation may be exemplified by that of the bamboo, a tree of the cane, or reed kind, but much larger, ſmoother, harder, and ſtronger than any other ſpecies. The ſecond coat, or ſkin of the bark, which is white and ſoft, is commonly what is uſed for paper. This they beat in fair water to a pulp, which they take up in very large moulds or frames, ſo that they have ſheets ten or twelve feet long, and ſometimes more. They are compleated by dipping them ſheet by ſheet in alum-water, which ſerves inſtead of the ſize we make uſe of, and not only hinders the paper from imbibing the ink, but gives it a luſtre that makes it look as if it were ſilvered, or at leaſt varniſhed over. This ſort of paper is white, ſoft, cloſe, and without the leaſt roughneſs; though, being made of the bark of a tree, it cracks ſooner than European paper. Add to this, that it is more apt to take moiſture, that the duſt ſticks to it, and that it is more liable to worms; to prevent which laſt inconveniency, the Chineſe often beat their books, and expoſe them to the ſun. Its thinneſs like-

wiſe makes it not ſo durable, ſo that they are under a frequent neceſſity of renewing their books by freſh impreſſions.

The paper of the bamboo, however, is not the beſt that is made in China, that of the cotton-ſhrub being the whiteſt and fineſt, and leaſt ſubject to the inconveniencies above mentioned. But the paper moſt commonly uſed in China is made of the tree called chuku or kuchu, which Du Halde compares firſt to a mulberry tree, then to a fig tree, then to a ſycamore, &c. ſo that from his deſcription we know as little of it as if he had ſaid nothing about it. The greeniſh outſide of this tree being firſt ſcraped away, the inner rind is taken off in long thin ſlips, which are blanched in water expoſed to the ſun, and then prepared and made into paper in the ſame manner as the bamboo.

Here it is to be obſerved that the bamboo and the cotton-ſhrub have this peculiarity, that not only their inner bark, but their whole ſubſtance may be employed, being prepared in the following manner: Out of a wood of the largeſt bamboos they ſelect ſhoots of a year's growth, which are as thick as the calf of a man's leg; and theſe, being ſtripped of their outſide rind, are ſplit into ſtraight pieces ſix or ſeven feet long, and ſteeped in a pond of muddy water, till they grow ſoft and rot by the maceration. They are then taken out, waſhed in clean water, ſpread in a large dry ditch, and there covered with lime for a few days. After this they are waſhed a ſecond time, then ſeparated in filaments, which are expoſed to the ſun to dry and whiten, then thrown into large coppers, where they are thoroughly boiled, and afterwards reduced to a thin paſte or pulp by the ſtrokes of weighty hammers. With this pulp they mix an unctuous kind of juice, extracted from the ſhoots of a plant called koteng, care being

taken not to put in too much or too little, on which the goodneſs of the paper very much depends. Having beaten this mixture well together, till it reſembles a thick clammy water, they pour it into a large reſervoir, with low walls round it, and ſo cemented on the ſides and at bottom, as not to be penetrated by the liquor. This being done, the workmen ſtanding at the ſides of the reſervoir dip in their moulds, and take up the ſurface of the liquor, which inſtantly becomes paper, the mucilaginous juice of the koteng binding the parts, and rendering it compact, ſoft, and gloſſy. To make ſheets of an extraordinary ſize, they have large moulds ſuſtained by ſtrings, and lowered and raiſed by pullies, ſome of the workmen being employed to let down and pull up the frame, and others to take off the ſheets, each doing his office with great regularity and expedition.—In order to harden the ſheets, and make them bear ink, they undergo the following operation called fanning, from the Chineſe word fan, which ſignifies alum. Six ounces of fiſh-glue being cut ſmall and ſteeped in water, it is afterwards boiled and ſtirred all the time to prevent lumps; and, the whole being reduced to a thin liquid ſubſtance, they melt and incorporate it with three quarters of a pound of calcined alum. Then this mixture is put into a wide baſon, and, each ſheet being drawn nimbly through it by means of a ſtick they uſe for that purpoſe, the paper is hung up to dry; for which end they have a hollow wall, whoſe ſides are well whitened, through which it receives the heat of a neighbouring furnace; and by the help of this ſort of ſtove the ſheets are dried in a very little time.

This account of the Chineſe paper leads us to deſcribe their ink, which is an admirable compoſition, in vain attempted to be imitated in Europe. The Chi-

neſe or Indian ink (as we commonly call it) is not fluid as ours is, but ſolid, like our mineral colours, though much lighter. It is made of lamp-black of ſeveral kinds, but the beſt is that obtained by burning hog's-greaſe; and with the black they mix a ſort of oil to make it the ſmoother, adding ſome odorous ingredients to take away the rankneſs of the ſmell. When it is mixed into a paſte of a proper conſiſtence, they form it in moulds into little oblong ſticks or cakes, about a quarter of an inch thick, and adorned with the figures of dragons, birds, flowers, &c. which are curiouſly cut in the wooden mould. To uſe this ink they have a piece of poliſhed marble, made hollow ſo as to contain a little water, in which the ſtick of ink is rubbed till the water becomes of a ſufficient blackneſs. Thus they preſently have a fine ink, exceeding black, and of ſuch a nature that it never runs or ſpreads farther than the pencil, ſo that the letters are always ſmooth and evenly terminated. It is of great uſe in deſigning, becauſe the colour may be weakened or heightened at pleaſure.

The Chineſe have a pretty method of ſilvering paper (if we may call it ſo) at a ſmall expence, and without uſing any ſilver. In order to this they take two ſcruples of a ſize or glue made of leather, one of alum, and half a pint of clean water. Theſe they ſimmer over a gentle fire till the water is conſumed, that is, till no more ſteam ariſes; and with a pencil they ſpread two or three layers of this glue over the ſheets of paper laid ſmooth upon a table. Then through a fine ſieve they ſift over the paper a powder made of talc and alum, which having been boiled in water is dried in the ſun and pounded; and this being ſpread uniformly on the ſheets, they hang them in the ſhade to dry; after which they are laid again on the table, and

rubbed gently with clean cotton, to take off the ſuperfluous powder, which ſerves a ſecond time for the ſame purpoſe.

The manufacture of porcelane or China ware was a long time a myſtery in Europe, in ſpite of all the endeavours of the Jeſuit miſſionaries to penetrate into the ſecret. The veil however was at length removed by father d'Entrecolles, who, in a letter from China to father Orry in the year 1712, (which was publiſhed in French) deſcribes the whole proceſs in all its circumſtances; an extract whereof cannot fail of being agreeable to the curious reader. Two kinds of earth are uſed in the compoſition of porcelane, the one called kaulin, full of glittering particles, and the other petunſe, which is of a plain white, dug out of the mines in the ſhape of bricks, and much harder than the former. This laſt ſort of earth is firſt broken and pounded into a coarſe powder with iron hammers, wrought either by the hand or by mills; and when by repeating the operation, the powder is rendered almoſt impalpable, they throw it into a large urn full of water, ſtirring it briſkly about with an iron inſtrument. Then letting the water reſt a while, they ſkim from the top a white ſubſtance formed there, of the thickneſs of four or five fingers, putting this ſcum or cream into another veſſel of water. They then ſtir the water of the firſt veſſel a ſecond time, and when it has ſettled they ſkim it again; and ſo alternately, till nothing remains at the bottom but the gravel of the petunſes, which are committed to the mill for another grinding. As to the ſecond urn, wherein the ſkimmings of the firſt were put, when the water is well ſettled and become quite clear, they pour it off, and fill a kind of moulds with the ſediment collected at the bottom, which, when almoſt dry, they take out and cut into

ſquare pieces. The preparation of the kaulin is the ſame, only this being ſofter will diſſolve in the water without pounding.

A third ingredient in the compoſition of porcelane is an oil or varniſh drawn from the hard petunſes, which for this purpoſe undergo the ſame preparation as for making the ſquares, except that the ſediment of the ſecond veſſel is not put into moulds, but the fineſt part of it uſed to compoſe the oil (as they call it) which is a whitiſh liquid matter. With this matter they mix a powder made of calcined mineral ſtone called ſhekau, reſembling our alum, which gives the oil a good conſiſtence, but not ſo as to deſtroy its fluidity.

The oil of lime makes a fourth ingredient, the preparation whereof is more tedious than the former. They firſt ſprinkle water on quick lime, and thereby reduce it to a powder, on which they lay a bed of dry fern, and on the fern another of ſlaked lime, and thus alternately till they have a pile of a moderate height; which done, they ſet fire to the fern, and, the whole being conſumed, they ſprinkle the aſhes on new beds of fern, ſetting them on fire as before. This they repeat five or ſix times ſucceſſively, or even more; the oil being the better, the oftener the aſhes are burnt. A quantity of theſe aſhes are now put into a veſſel of water, and to every hundred weight of aſhes is added a pound of ſkekau, which diſſolves in the water. This mixture is well ſtirred together, then ſtands to ſettle, and, after a farther preparation in another veſſel, the ſediment at the bottom, which is to be kept liquid, is what they call the oil of lime, eſteeming it the ſoul of the former oil, and that which gives the porcelane all its luſtre.——Ten meaſures of the petunſe oil are uſually mixed with one of lime; and, to have the

mixture juſt, the two oils ſhould be of an equal thickneſs.

It is almoſt inconceivable what a number of perſons are employed in this manufacture, there being ſcarce a piece of porcelane that does not paſs through more than ſixty hands before it is brought to perfection. The places they work in are vaſt incloſed yards, built round with ſheds and other conveniencies, as well as lodgings for the workmen. In mixing the two earths regard is had to the fineneſs of the ware intended to be made, equal quantities of petunſe and kaulin being uſed for the fineſt porcelanes, and one part of kaulin to three of petunſe for the coarſeſt. The hardeſt part of the work is the kneading and incorporating the two earths together, which is done in large baſons or pits well paved and cemented, wherein the workmen trample it continually with their feet, relieving one another till the maſs be well mixed, grows hard, and is fit for the potter. After the earth is taken out of the pits, it is kneaded by piece-meal with the hands on large ſlates; and on this operation the goodneſs of the work very much depends, the leaſt heterogeneous body, remaining in the maſs, or the leaſt vacuity, being enough to ſpoil the whole. The ſmalleſt grain of ſand, nay, ſometimes a ſingle hair, will make the porcelane crack, warp, or ſplinter.

Smooth pieces of porcelane, ſuch as cups, ſaucers, diſhes, &c. are faſhioned with the wheel, like our earthen ware; but thoſe which are adorned with figures of animals, &c. in relievo are formed in moulds, and finiſhed with the chiſſel. Indeed all the porcelanes made in moulds are finiſhed by the hand, with ſeveral inſtruments proper to dig, ſmooth, poliſh, and touch up the ſtrokes that eſcape the mould; ſo that it is rather a work of ſculpture than of pottery. On ſome

veſſels they add relievos ready made, as dragons, flowers, &c. and others have ornaments engraven with a kind of puncheons. The moulds are made of a yellow earth, well kneaded and beaten, and are ſold very dear, but they laſt a long time.

It is to be obſerved, that large veſſels of porcelane are made at twice, one half of the piece being raiſed on the wheel by three or four workmen, who hold it till it has acquired its figure; and, the other half being formed in the ſame manner, they join them together with porcelane earth diſſolved in water, poliſhing the juncture with a kind of iron ſpatula. By the ſame means they join together ſeveral pieces of porcelane formed in moulds or by the hand; and alſo add handles, &c. to cups or other veſſels faſhioned by the wheel.

The many hands which a common tea-cup paſſes through before it be fit for the painter may give us an idea of the number employed in other branches of this curious manufacture. The cup is begun by the potter, who has the management of the wheel, from whence it acquires its form, height, and diameter; but it comes out of his hands very imperfect, eſpecially towards the foot, which is only an unformed lump of earth, to be cut with a chiſſel when the cup is dry. From the wheel the cup is received by a ſecond workman, who forms its baſe; and a third takes it immediately from him, and applies it to a mould on a kind of lathe, to give it its true ſhape. A fourth workman poliſhes the cup with a chiſſel, eſpecially about the edge, and brings it to ſuch a thinneſs as is neceſſary to make it tranſparent; in doing which he moiſtens it from time to time, to prevent its breaking. After this another turns it gently on a mould to ſmooth its inſide, taking great care that it be done equally, leſt it ſhould warp, or any cavity be formed.

Some workmen add relievos, others adorn the veſſels with the graver or puncheon, others add handles, &c. each keeping to his particular employment. Even the rounding and hollowing the foot of a cup on the inſide with a chiſſel is the buſineſs of an artiſt who meddles with no other part. And this multiplicity of hands is ſo far from retarding the work, that it is found by experience to be carried on the faſter for it, as well as to be better performed; each workman, by a continual attention to the ſame thing, being more perfect and ready at it, than if he were frequently ſhifting from one operation to another.

The painting is none of the leaſt beauties of the porcelane, but it would be a conſiderable addition to it if the deſigns were more juſt and regular. The flowers and landſkips indeed are ſometimes tolerable, and their borders prettily variegated; but their human figures are monſtrous, and look as if they were fond of deviating from nature. This buſineſs is divided among a great many workmen in the ſame laboratory: One is employed in forming the coloured circle about the edges of the porcelane; a ſecond traces out flowers, which another paints; this is for landſkips only, that for birds and other animals, and a third for human figures. As to the colours of porcelane, they are various, both with reſpect to the ground, and the paintings. Some are ſimple, as all blues, which are thoſe uſually ſeen in Europe; others are made up of ſeveral teints, and others are heightened with gold.

The blue is made of lapis lazuli calcined, and reduced to an impalpable powder by beating it in porcelane mortars not varniſhed, with peſtles of the ſame matter. For red they put copperas in a covered crucible, in the lid whereof there is a little hole, which they heat with a reverberatory fire till the black ſmoke

ceaſes to aſcend, and a fine red one ſucceeds it. By this proceſs a pound of copperas yields four ounces of red liquor, which is found at the bottom of the crucible, though the fineſt part is that which adheres to the lid and ſides. The powder of a white tranſparent flint, calcined like the lapis lazuli, is alſo an ingredient in ſeveral of their colours. The green, for inſtance, is made with three ounces of the ſcoria of beaten copper, half an ounce of powder of flint, and an ounce of ceruſe. For violet, they add white to the green already prepared; and for yellow they uſe ſeven drachms of white, and three of the copperas red. Moſt of theſe colours are mixed with gum-water for application; a little ſaltpetre, ſometimes ceruſe or copperas, but more uſually the latter, being firſt diſſolved in the water. When the veſſels are to be quite red, the colour is uſually applied with the common varniſh of the petunſe; but there is another ſort of red, called blown red, becauſe applied by blowing through a pipe, one end whereof is covered with a fine gauze, on which the colour is ſpread, and by blowing at the other end the porcelane is ſprinkled all over with little ſtains, which are exceeding beautiful. This ſort of ware is very ſcarce, and of great value.——The black porcelane has likewiſe its beauty, whoſe colour has a leadiſh caſt, and is uſually heightened with gold. Three parts of lapis lazuli, with ſeven of the common oil of ſtone, make this colour, which is not applied till the porcelane be dry. Gold is prepared for application by breaking it and ſteeping it in water till a thin gilded cloud riſes on the ſurface: It is uſed with gum-water, and to give it a body they add three parts of ceruſe to thirty of gold.

There are ſeveral other kinds of porcelane, but ſuch as are rather for ornament and curioſity than for uſe.

One of the prettieſt is the magic porcelane, ſo called becauſe the painting of the cups do not appear, unleſs they are filled with liquor. The ſecret of making theſe magic porcelanes is ſaid to be almoſt loſt among the Chineſe, but our author informs us they muſt be very thin; and the colours, which on other cups are applied on the outſide, are in theſe applied on the inſide. When the colours are dry, they are covered over with a ſize made of the porcelane earth, and thus they are incloſed between two earthen laminæ. After the ſize is dry, they pour oil into the cup; and, when it is ſaturated therewith, they return it to the wheel to be made as thin and tranſparent as poſſible. The colours here uſed are always the fineſt, and the figures painted are fiſhes, which are ſuitable, as they ſeem to ſwim in the liquor.

The painting of the ſeveral kinds of porcelane being finiſhed, and the colours dry, the next ſtep is to poliſh them, to prepare them to receive the oil or varniſh, whoſe compoſition has been already mentioned. This is done with a pencil of very fine feathers dipped in water, and bruſhed ſlightly over the porcelane, which takes off the leaſt roughneſs or inequalities. It is then fit to be varniſhed, in which operation a great deal of care and ſkill are requiſite, both that the varniſh be laid on equally, and not in too large quantities; for it is applied thicker or thinner, and ſeldom or oftener repeated, according to the fineneſs of the porcelane.

We now come to the laſt preparation of this brittle ware, viz. the baking of it, for which purpoſe the Chineſe have two kinds of ovens; large ones for ſuch works as are only to be once baked, which is the common way; and ſmall ones for thoſe that require a double baking. The large ovens are two fathoms deep, and almoſt four wide, and the ſides and roof are ſo thick

that one may lay one's hand on them when the fire is at its height, without danger of burning. They are built in form of a tunnel, having a large aperture at top to give vent to the ſmoke and flame, beſides four or five ſmall ones round them, which are opened or ſhut to diminiſh or augment the heat, like the holes called regiſters in the furnaces of chymiſts. Each oven is placed at the end of a long narrow paſſage, which ſerves inſtead of bellows, the wind being thus driven directly to the mouth of the furnace.

Every piece of porcelane of conſiderable value is diſpoſed in the oven in a ſeparate caſe or coffin; but as to tea-cups, and ſuch ſmall veſſels, the ſame caſe ſerves for ſeveral. Theſe caſes are made of the ſame earth with the oven, and uſually of a cylindrical form, that the fire may communicate itſelf the more equally to the porcelane incloſed. The bottom of each caſe is ſprinkled over with very fine ſand covered with duſt of kaulin, that the ſand may not ſtick to the work; and care is taken that the porcelane do not touch the ſides of the caſes. In the larger caſes, which contain the ſmall pieces, they leave the middle vacant, becauſe the veſſels placed there would want the neceſſary heat; and each of theſe little pieces is raiſed on a ſmall mace of earth covered with powder of kaulin. The porcelane is put into caſes leſt the too violent effects of a naked fire ſhould diminiſh its luſtre; for it is owing to theſe thick coverings that the beautiful complexion of the ware is not tarniſhed by the exceſſive heat.

As faſt as the caſes are filled, a workman ranges them in the furnace, forming them into piles or columns, whereof thoſe in the middle are at leaſt ſeven feet high. The caſes of the fineſt porcelane are placed in the center, and the coarſeſt at the bottom; and in this manner the whole cavity of the oven is filled

with piles, except that part directly under the large aperture. Theſe piles are placed near one another, and are ſo bound together at top, at bottom, and in the middle, as that the flame may have a free paſſage among them, and inſinuate itſelf equally on all ſides; in which lies a great part of the workman's art, and on which the goodneſs of the porcelane much depends. Another thing they obſerve is, never to fill an oven with all new caſes, but half new, half old; the old ones being ſet at the top and bottom of the pile, and the new ones in the middle. Theſe caſes are yellow before they are burnt, but afterwards they are of a dark red.

When the oven is full, the door or mouth is walled up, only a little hole being left to throw in ſmall pieces of wood to feed the fire. It is then heated gradually for four and twenty hours; after which two men, who relieve one another, throw in fuel without intermiſſion: And, what ſeems very ſtrange to our author, the workmen thus employed about the furnaces drink hot tea with ſalt diſſolved in it to quench their thirſt. To know when the porcelane is ſufficiently baked, they open one of the little holes above mentioned, and with a pair of tongs take off the covering from the top of one of the piles; and if theſe appear to be equally heated, and the colours of the porcelane uncovered have a noble luſtre, they diſcontinue the fire, and cloſe up the aperture left at the mouth of the furnace. After the fire is extinguiſhed, if the baking conſiſt of cups and ſuch-like ſmall veſſels they let them remain in the oven about twelve or fifteen hours; but, if the porcelane be large, they defer opening it for two or three days: In which particular the modern practice differs from the ancient, where-

in all kinds of veſſels remained in the oven conſiderably longer.

There is another ſort of porcelane which is twice painted and twice baked, for which they have little ovens on purpoſe. Some of theſe are made of iron, and are very ſmall; others of a kind of bricks, of the ſame earth with the porcelane caſes. The largeſt of them, however, does not exceed five feet in height, and three in diameter, being built in the form of beehives. Round the oven, at about half a foot diſtance, is raiſed a ſhell of common bricks, joined to the oven itſelf by a kind of arch which ſerves to ſtrengthen it; and four or five of theſe are uſually built at equal diſtances from each other. At the bottom of the ſhell are holes to give air to the fire, and at the top there is an aperture, which is covered when the porcelane is put into the oven. The ware here is not incloſed in coffins, as in the larger furnaces, the oven ſerving for that purpoſe, and being ſo exactly cloſed that the veſſels receive no impreſſion of the fire but what proceeds from the charcoal diſpoſed in the hearth at the bottom of the oven, and in the interval between the oven and external ſhell.

To prepare the porcelane for this ſecond baking, it is varniſhed in the common manner; and having paſſed the great oven, it is then painted with various colours, after which, without any additional varniſhing, it is ranged in piles in the little oven, the ſmall veſſels being placed upon the larger in form of pyramids. The intent of the ſecond baking is ſometimes to preſerve the colours the better, and to give them a ſort of relievo; but its more uſual deſign is to hide defective places with the colouring, though the artifice is not difficult to be diſcovered.

Our curious author further obſerves, that the taſte

for antiquity, which reigns in China as well as in Europe, gives the ancient porcelane a value far above the modern, insomuch that some workmen make it their business to counterfeit the former.——With respect to the dearness of porcelane, notwithstanding the vast quantity thereof which is made in China, he says it is chiefly occasioned by the frequent miscarriages in the baking of it, as it rarely happens that an oven succeeds throughout. Sometimes it is quite spoiled, so that upon opening it, instead of fine porcelane, is found a hard unformed mass, into which both the vessels and their coffins are converted, either by excess of heat, or some ill quality in the matter. Another reason of its dearness, besides the great profit of the European merchants and their factors, is the ingredients that it is made of, and the wood used in burning it, growing more and more scarce. To which a third reason, and that none of the least, may be added, viz. that most of the porcelanes made for Europe are formed on new models, frequently very difficult to succeed in, which yet for the smallest defects, are turned upon the hands of the manufacturer; and he, not being able to sell them to the Chinese, because not to their taste, is forced to put a higher price on the porcelanes he vends, to pay himself for those refused.

The reason of the japanned works executed at Canton not being so beautiful nor so much in request as those that are made in Japan itself, or at Tonking, and Nanking, capital of the province of Kiang nan, is not because the workmen do not use the same varnish and the same gilding, but because they make them in too great a hurry, and if they do but please the eye of the Europeans, they are very well satisfied.

If you would have a work well japanned, it must be done leisurely, a whole summer being hardly sufficient

to bring it to perfection. The Chineſe ſeldom have any beforehand, or that has lain by for ſome time, for they almoſt wait for the arrival of ſhips before they begin, that their work may be agreeable to the European taſte.

This varniſh, which gives ſo fine a luſtre to their pieces of work, and makes them ſo much eſteemed by the Europeans, is not a compoſition, nor ſo great a ſecret as has been imagined by ſome people.

The varniſh called Tſi by the Chineſe is a reddiſh gum which diſtils from certain trees, through inciſions made in the bark of the tree; theſe trees are to be found in the provinces of Kiang ſi and Se tchun; but thoſe of the diſtrict of Kan tcheou, one of the moſt ſouthern cities of Kiang ſi, yield the varniſh of the moſt value.

Theſe trees muſt be ſeven or eight years old before the varniſh can be extracted from them, as that which is taken before is not near ſo good a ſort. The trunk of the youngeſt trees from which they begin to get varniſh are a Chineſe foot in circumference, and a Chineſe foot is much larger than the king's foot in France. It is ſaid that which diſtils from theſe trees is better than that which is got from older, but then they yield much leſs; yet it is hard to ſay what foundation there is for this, becauſe the merchants make no ſcruple of mixing them both together.

Theſe trees, whoſe leaf and bark greatly reſemble thoſe of the aſh, are ſeldom upwards of fifteen feet in height, and then the circumference of the trunk is about two feet. I have been told that they bear neither flowers nor fruit, and that they are thus multiplied.

When the tree begins to ſprout in the ſpring ſeaſon, they make choice of the moſt likely twig that proceeds

from the trunk and not from the branches; when the twig is about a foot long, they cover it with clay made of a yellow earth; this covering begins at about two inches above the place where it proceeds from the trunk, and is continued beneath four or five inches; the thickneſs of the covering is at leaſt three inches; a mat is carefully tied over this, to preſerve it from the rain and injuries of the air: It is left in this manner from the vernal to the autumnal equinox, and then they open the earth very carefully to examine the condition of the roots which the twig ſhoots forth, and which are divided into ſeveral ſtrings; if theſe ſtrings are of a yellowiſh or reddiſh colour, they judge that it is time to ſeparate the root from the tree, and then they cut it dexterouſly without any injury to it, and afterwards plant it.

If theſe threads are ſtill white, it is a ſign they are too tender, and ſo they cloſe up the earth again as it was before, and defer the planting of the ſhoot till the next ſpring; but whether it is planted in the ſpring, or autumn, there muſt be a good deal of aſhes put into the hole that is prepared, otherwiſe the piſmires would devour the tender roots, or at leaſt get out all the ſap, and ſo cauſe them to wither.

No other ſeaſon but ſummer will do for extracting the varniſh from theſe trees, for in the winter they yield none, and that of ſpring or autumn is always mixed with water; beſides, theſe trees do not diſtil the leaſt varniſh during the day, but all in the night.

In order to procure the varniſh they make ſeveral inciſions in the bark round about the trunk, which muſt be deeper or ſhallower according to its thickneſs; the firſt row of inciſions is about ſeven inches above the ground, at the ſame diſtance a little higher is another row, and thus from ſeven inches to ſeven inches, not

only to the top of the trunk, but even along ſuch of the branches as are thick enough for the purpoſe.

They uſe a ſmall crooked knife in making theſe inciſions, which are made not directly downward but oblique, as deep as the bark is thick, and no more. He who makes them with one hand has a ſhell in the other, the edge of which he thruſts in as far as he is able, which is about half a Chineſe inch, and this is ſufficient to ſupport the ſhell without any thing elſe. Theſe ſhells, which are common in China, are much larger than our oyſter-ſhells: theſe inciſions are made in the evening, and the next morning they gather what is run into the ſhells; the next evening they fix them again in the ſame inciſions, and ſo continue in this manner till ſummer is ended.

The merchants contract with the proprietors of theſe trees at the proper ſeaſon, giving them about twopence halfpenny a plant, and hire workmen, who receive an ounce of ſilver a month for their labour; but if they have their meat found them, which is ſeldom the caſe, then they have but about three halfpence a day; and one of theſe people can manage fifty of theſe plants.

It is neceſſary to take ſome precautions to ſecure the workmen from bad impreſſions of the varniſh, ſo that whether the merchant maintains them or not, they are obliged to have a large veſſel of oil, wherein has been boiled a certain quantity of the filaments found mixed in hogs' fat, and which will not melt with the other part; the proportion is one ounce to one pound of oil.

The workmen carry with them a little of this oil when they go to place the ſhells in the trees, and with it rub the face and hands, and in the morning, when they have gathered the varniſh and return to the merchants, they rub themſelves more carefully with it.

After dinner they waſh their bodies with hot water which the merchant has ready, in which they boil a certain quantity of the following drugs, which are all imagined to be of a cold nature, viz. Saltpetre in cryſtals, the outward bark of cheſnuts, the bark of the fir-tree, and an herb which they eat in China and in the Indies, and is a ſort of blits.

Every workman fills a little baſon with this water, and carefully waſhes himſelf with it; but they make uſe of tin baſons, not chuſing to uſe the copper ones which the Chineſe have for waſhing themſelves in the morning.

When they work at the trees, they wrap their heads in a linnen bag, which they tie about their necks, and leave only two holes to ſee through; they cover themſelves before with a ſort of apron made of doe-ſkin, which they tie about their necks with ſtrings; they have alſo buſkins of the ſame, and long gloves on their arms: for it is very pernicious to the hands and face, and cauſes ſwellings and lameneſs, which it is almoſt impoſſible to cure.

When they gather their varniſh they have a veſſel made of neats' leather faſtened to the girdle, with one hand they take out the ſhells, and with the other they ſcrape them with a ſmall iron inſtrument till they have got out all the varniſh; at the bottom of the tree is a baſket, wherein they leave the ſhells till the evening. To render the gathering of varniſh as eaſy as poſſible, the owners of the trees take care to plant them at a ſmall diſtance from each other, and when the time of gathering it is come, they faſten with cords a great number of poles acroſs from one tree to another, which ſerve inſtead of ladders to get up by.

The merchant takes care to have ready a large ear-

then veſſel, on which is a wooden frame ſupported by four feet, like a ſquare table whoſe leaf is taken off, upon the frame is a thin cloth faſtened to rings by the four corners; this cloth is kept very ſlack, and on it they pour the varniſh; that which is fluid runs thro' of itſelf, but they wring the cloth to make the reſt run thro', and the little that remains in the cloth is placed apart, and ſold to the druggiſts, becauſe they ſometimes make uſe of it in phyſic. When a thouſand trees in one night yield twenty pound weight of varniſh, they are conſiderable gainers.

When the gathering of the varniſh is over, the merchant puts it in very ſtrong wooden buckets. A pound of varniſh, while it is freſh, is valued at about twenty pence, and the merchant gets double, or more, according to the diſtance of the place to which it is tranſported.

Beſides the gloſs which the Chineſe varniſh gives to the leaſt piece of work it is applied to, it has alſo the property of preſerving the wood, and preventing the leaſt moiſture from penetrating therein; whatever liquid matter is poured upon it, if it is wiped with a wet cloth it leaves no mark behind it, nor even the ſmell of that which was poured upon it; but there is a great art in applying it, for though it is naturally ſo good, yet it has need of a dexterous and careful hand to apply it as it ought; a great deal of ſkill and patience are neceſſary in the workman to find the juſt temper that the varniſh requires, for if it be either too thick or too thin, it will make but a poor appearance.

They have two different methods of applying the varniſh; the moſt ſimple is, to put it immediately upon the wood; after it has been well poliſhed, they paſs over it two or three times a kind of oil, called

Tong yeou by the Chineſe; when it is well dried they lay on their varniſh two or three times; it is ſo tranſparent that you ſee the grain of the wood clearly through it, and therefore if they would hide the materials they work upon, they lay on the varniſh ſeveral times, and then it becomes ſo gloſſy that it reſembles a looking-glaſs. When the work is dry they paint various kinds of flowers, men, birds, trees, mountains, palaces, &c. after which they lay varniſh once more, as well to preſerve it as to give it a gloſs.

The other method, which is not ſo ſimple, requires more preparation, for it is laid upon a kind of ſmall maſtic, which has been before applied upon the wood; then they make a kind of paſteboard of paper, flax, lime, and ſome other materials well mixed, which they glue upon the wood, it making a very ſolid and ſmooth ground, upon which they paſs the before-mentioned oil two or three times; afterwards they do it ſeveral times over with varniſh, which they dry one after another. Every workman has his particular ſecret, which renders the performance more or leſs beautiful according to his ſkill.

When tea or other hot liquors are ſpilt upon theſe works, the luſtre is frequently loſt, the varniſh tarniſhing and becoming yellow: As a means of reſtoring the ſhining black that it had before, a Chineſe author ſays, you muſt hold it a few hours amongſt ſnow, or elſe expoſe it for a night to a white froſt.

The Chineſe have water-mills on moſt of their rivers, and are made uſe of in grinding the bark of trees to make paſtils withal; the wheel of theſe mills is placed horizontally, and hath double fellows about a foot or a foot and half from each other; theſe fellows are united by little boards placed obliquely in ſuch a manner, that in the upper part they leave an opening ſuf-

ficiently large, and on the lower part very narrow; the water that falls like a ſheet two feet above theſe little boards, makes the wheel turn round pretty ſwiftly. They have alſo a prodigious number of hand-mills, which requires nothing more than ſtrength of arms.

The invention of the Chineſe is not ſo good as that of our mechanics, but the tools they make uſe of are more ſimple, and they can exactly enough imitate any pattern that is brought them from Europe; ſo that at preſent they can make clocks, watches, glaſs, muſkets, piſtols, and ſeveral other things, of which they were quite ignorant, or made but very imperfectly.

Among the other inſtances of their ingenuity, that practiſed in fiſhing appears not the leaſt extraordinary. Beſides the line, nets, and the ordinary inſtruments uſed in Europe, which they employ as well as we, they have two methods that appear extremely odd. The one is practiſed in the night by moon-ſhine; they take two long ſtrait boats, and nail a board about two foot broad, painted white, and vaniſhed, on the ſides from one end to the other. This plank ſlopes outward, and almoſt touches the ſurface of the water: In order to anſwer their purpoſe, they turn towards the moon, that the reflexion of that luminary may encreaſe its brightneſs: When the fiſh playing and miſtaking the colour for that of the water, ſpring up towards it, and either fall upon it, or into the boat. So that the fiſhermen with very little trouble ſoon fill their boat.

Another manner of fiſhing ſeems at firſt equally ſurpriſing: As the Europeans and others breed up hawks to fly at the game, and catch birds, they train cormorants to catch fiſh: One fiſherman can eaſily look after an hundred of them: He keeps them perched on the ſides of his boat, waiting patiently for their orders, till they are come to the place deſtined for fiſhing in,

and then at the firſt ſignal each takes its flight, and flies the way aſſigned it. It is pleaſant to ſee them divide amongſt themſelves the whole breadth of the river, or of the lake: They ſeek up and down, they dive, come up again, and hover over the water till they perceive their prey; when they inſtantly dart upon it, ſeize it with their beak, and bring it to their maſter. When the fiſh is too big, they help one another interchangeably, one taking it by the tail and another by the head, in which manner they carry it to the boat, where the men hold out long oars or ſtrong canes for them, on which they perch with their fiſh, which they do not part with till they go in ſearch of others. When they are weary they let them reſt a while; but give them nothing to eat till the fiſhing is over, during which time the throat of each cormorant is tied with a ſmall cord, for fear they ſhould ſwallow the ſmall fiſh, which might prevent their having any inclination to return.

The manner of catching water-fowl in China, as well as in India and Mogul, is very curious. When the fowler ſpies his game, he wades with only his head above water, which is covered with a pot full of holes, to let in air, and give him ſight. This pot is ſtuck all over with feathers, to deceive the game, ſo that when he draws near them, either by ſwimming or walking, they are not in the leaſt frightened. The fowler then lays hold of them by the feet, drawing them down under water; and the reſt of the fowls, thinking their companions have only divided, are not in the leaſt diſturbed, but keep ſwimming about the place, till they are at length moſt of them taken in the ſame manner.

The Chineſe have a very ſingular method of diſperſing all kinds of fiſh into different provinces even be-

fore they have life. About the month of May, they draw matts acroſs the great river Yang tſe Kyange in order to ſtop the ſpawn, which they know how to diſtinguiſh at firſt ſight, though the water is ſcarce altered by it; with this water mixed with ſpawn they fill many veſſels, which they ſell to the merchants, who go thither in great numbers in this ſeaſon to buy it, and tranſport it into different provinces. This they ſell by meaſure to thoſe who have fiſh-ponds belonging to their houſes. In a few days the young fry begin to appear in ſhoals, but the different kinds of fiſh cannot be diſtinguiſhed.

As it would be difficult to tranſport ſalt from the ſea-coaſts into the weſtern parts that join with Tartary, Providence has wonderfully provided for their neceſſity: Beſides the ſalt-pits that are met with in certain provinces, there are other places that have ſpots of grey earth ſcattered up and down, from whence they get a vaſt quantity of ſalt.

The way is very remarkable in which they get this ſalt: They level the ſurface of this earth as ſmooth as glaſs, and make it a little ſloping, that the water may run off it; when the ſun has dried it very well, and it appears white from particles of ſalt which are mixed with it, they raiſe it up in little heaps, then take it and ſpread it upon large tables that lean a little on one ſide, and that have ledges about four or five fingers high; then they pour ſoft water upon it, which ſoaking in extracts the ſalt, and runs into an earthen veſſel by means of a channel made on purpoſe: This earth, thus drained, does not become uſeleſs, but is laid aſide, and after a few days, when it is quite dry, they reduce it to powder, and lay it in the ſame place from whence it was taken, where after it has lain ſeven or eight days it is mixed again with par-

ticles of ſalt, which are again extracted from it in the manner above mentioned.

While the men are thus employed in the fields, the women and children are buſy in huts built in the ſame place, in boiling the ſalt water: They fill large deep iron baſons, which they place over an iron ſtove, with holes made in it in ſuch a manner that the fire heats all the baſons alike.

After the ſalt-water has been boiling ſome time it grows thick, and changes by degrees into a very white ſalt, which they ſtir conſtantly with a large iron ſpatula till it is quite dry. A whole foreſt would hardly be ſufficient to maintain the fire neceſſary for the ſalt which is made all the year, but as there are no trees, generally ſpeaking, in theſe places, Providence ſupplies them with large quantities of reeds, which grow in the neighbourhood of theſe ſalt ſpots.

An immenſe number of barbers are perpetually walking the ſtreets, with a little kind of bell to give notice of their approach to ſuch as want to make uſe of them; they carry on their ſhoulders a ſtool, their baſon, their kettle and fire, with a towel and comb-caſe, and immediately in the ſtreet, or in the middle of a ſquare, or in a porch, or wherever elſe it is deſired, they ſhave the head very dexterouſly, according to the cuſtom of the Tartars; they ſet the eye-brows in order, clean the ear with inſtruments proper for that purpoſe, ſtretch out the arms, rub the ſhoulders, and do all this for the value of three farthings, which they receive very gratefully; after which they again ring their bell, and go in ſearch of other cuſtomers.

A great many get their living by furniſhing carriages to paſs through the city, eſpecially at Peking; you find in every ſquare and croſs ſtreet horſes ready ſaddled, as well as mules and chairs, and may have

at all hours of the day, at any of theſe places, fifty or an hundred of theſe vehicles at a very moderate price.

In ſhort, there is ſcarce any invention to which they have not recourſe to find means of ſubſiſtence; for as there is not a ſpot in all the empire that lies untilled, ſo there is not one perſon, either man or woman, tho' never ſo old, deaf, or blind, but what may gain a livelihood. Things which appear very uſeleſs in other places a Chineſe will make a profit of; a great many families in Peking gain a livelihood by ſelling matches; others have no other buſineſs but picking up in the ſtreets little rags of ſilk, woollen, cotton, or linnen, the feathers of fowls, bones of dogs, and bits of paper, which they waſh and ſell again.

If the Chineſe would accompany labour and natural induſtry with a little more honeſty, eſpecially with reſpect to ſtrangers, they would make complete merchants; but they ſeldom fail to cheat whenever it is in their power. They falſify almoſt every thing they ſell; and in particular they counterfeit gammons of bacon ſo artfully, that people are often miſtaken in them, and when they have boiled them a long time, they find nothing, when they ſit down to eat them, but a piece of wood under a hog's ſkin.

Their ſubtlety in deceiving is ſtill more extraordinary in their thieves and robbers, who break through the thickeſt walls, burn gates, and make great holes in them, by the help of a certain engine that fires the wood without any flame. Thus they penetrate into the moſt private receſſes, and having, it is ſaid, a certain drug, the fume of which ſtupifies the ſenſes, and caſts perſons into a deep ſleep, they enter into the very bed-chambers without being perceived, and when the people awake in the morning, they are ſurpriſed

to find their bed without curtains, their chamber unfurniſhed, and the tables, cabinets, coffers, and every thing removed, without any footſteps being ſeen of the thieves but the hole in the wall, at which they went out with all the furniture of the houſe.

Of the CUSTOMS *and* MANNERS *of the* CHINESE.

IN China, on the birth of a child, ſo far from carefully covering its head with ſeveral kinds of caps, according to the European practice, it is left bare as it came out of the mother's womb; and when nature has provided for its ſecurity againſt the impreſſions of the air, by the growth of the hairs which are to cover it, the parents are careful to have the head ſhaved, though yet tender, that, ſay they, it may be inured to an operation which it muſt be continually undergoing during life; a ſhaven head being now the mode in China, no leſs than a fine head of hair was formerly.

At leaſt, did they uſe ſome precaution, as wearing caps, and covering their head in the night, there would be no great inconveniency in this conſtant ſhaving; whereas, in the ſevereſt cold, the ears of the Chineſe are always expoſed, the caps they uſe covering only the crown of the head, and ſcarce reaching to the forehead.

They always ſleep bareheaded, though their apartments are damp, as being moſtly on the ground-floor, and generally between court-yard and garden.

Princes, and ſome grandees, have wooden beds; but thoſe of all other ranks, very few excepted, are made of bricks, with a quilt or two ſpread over them; but theſe quilts are ſo ſlight, that it ſeems ſtrange ſo ſoft a people can habituate themſelves to ſo hard a couch.

Now, heads thus ſhaven, and expoſed to the inclemency and viciſſitudes of the air, muſt naturally be ſubject to many diſorders! accordingly a kind of deafneſs is ſo common, that a Chineſe, in his fortieth or fiftieth year, is ſeldom free from it; and perhaps it is in conſequence of this impediment to ſound, that their muſick pleaſes them infinitely beyond ours; and they had rather hear a drum, a ring of bells, or the jangling of a few braſs baſons, than a concert of European inſtruments, with which we are ſo exquiſitely affected. In China the human ear is univerſally long, broad, dangling, thick, open, and ſoft, with little or no border, and of a ſubſtance rather fleſhy than cartilaginous.

Small eyes, a flat noſe, an ill-ſhapen body, and a ſhaved head, make up the picture of a Chineſe.

However induſtrious and temperate theſe people are, the prodigious number of inhabitants occaſion a a great deal of miſery; there are ſome of them ſo poor that they cannot ſupply their inhabitants with the common neceſſaries of life, for which reaſon they expoſe them in the ſtreets, eſpecially when the mothers fall ſick, or want milk to nouriſh them; theſe little innocents are condemned to death in ſome ſenſe, as ſoon as they begin to live; and this is very common in the great cities, ſuch as Peking and Canton, but in the other cities ſuch inſtances are but few.

This has inclined the miſſionaries in populous places to educate ſeveral catechiſts, who divide the whole city among themſelves, and walk out every morning to baptize a multitude of dying children.

With the ſame view they have ſometimes prevailed upon the infidel midwives to permit Chriſtian women to follow them to the houſe where they are called, for it frequently happens that the Chineſe, not being in a condition to bring up a large family, engage the mid-

wives to ſtifle the female infants in a baſon of water as ſoon as they are born, upon which occaſion theſe Chriſtians take care to baptize them, and by this means theſe unhappy victims to the indigence of their parents, find everlaſting life in the ſame water that deprives them of a ſhort and tranſient being.

It is the ſame miſery that produces a vaſt multitude of ſlaves, or rather perſons who engage themſelves to a condition from whence they cannot be redeemed; a great number of men and maid-ſervants are thus bound in the ſame family, though there are ſome who receive wages, as in Europe.

A man ſometimes ſells his ſon, and ſometimes himſelf and wife, at a very moderate price, but if he can he is contented to engage his family only.

The rich, when they marry their daughters, give them ſeveral families of ſlaves in proportion to their wealth; it frequently happens that they gain their liberty, and ſome have half their freedom on condition that they pay yearly a certain ſum; if ſome of them grow rich by their induſtry, or by trade, their maſter does not ſtrip them of their goods, but is contented with large preſents, and lets them live honourably, but will not conſent to their redemption.

The generality of the Chineſe are not tall, but well ſet, and have broad faces. They allow their beards to grow long on the upper lip and bottom of the chin. They pluck the hair from their cheeks with tweezers, and, till they arrive at thirty years of age, ſeldom any beard appears.

Thoſe of the men who are eſteemed learned, allow the nails of their fingers, eſpecially thoſe of the left hand, to grow near as long as their fingers, to diſtinguiſh them from mechanics.

A man that is tall and corpulent is much admir-

ed: and, added to this, if he has a broad forehead, ſmall eyes, a ſhort noſe, and a long thin beard, he is looked upon as a compleat beauty. A ſtrong voice is reckoned a fine accompliſhment in a Mandarine of war, or a civil magiſtrate.

They travel generally on horſeback, ſometimes in chairs. Their horſes are ſmall, but nimble and ſure-footed, and they uſe a ſort of ſoft ſaddle, not much different from ours in Europe, but always keep very ſhort ſtirrups, their knees being almoſt equal with the horſe's ſhoulder. The chairs are made of bamboo, a ſort of cane, and have no glaſs; in other reſpects they are much like ours; but thoſe in which the ladies are carried are always provided with a lattice or blind to prevent their ſeeing or being ſeen. A piece of wood is placed croſs from the end of one pole to the end of the other, which the chairmen lay upon their ſhoulders, and never carry the poles in their hands.

There are no barriſters or lawyers in China; every man has liberty to manage his own cauſe; and if he thinks himſelf aggrieved by an inferior he may appeal to a ſuperior court.

The Chineſe women, who are not expoſed to the heat of the ſun, are as fair as any of their ſex in Europe; and, except that they have generally very little eyes and ſhort noſes, may vye with them in beauty. Their foreheads are large: their eyebrows ſmall and well arched; their eyes black, but almoſt hid with the lids; their mouth little, with plump lips of a deep vermilion colour; their checks and chins of a fine ſymmetry: their neck ſmall, their arms long and ſlender, and a pretty little hand. The nails of the ladies fingers are never pared, but kept very clean: they allow them to grow more than two inches in length, to ſhow that they are not employed in ſervile work.

They not only uſe the ſame kind of fleſh, fiſh, and fowl that we do, but even horſe-fleſh is eſteemed proper food. Nor do they reckon dogs, cats, ſnakes, frogs, or indeed any kind of vermin, unwholeſome diet. But their common food is rice, roots, and garden-ſtuff, and pretty often broths and ſoups. Salt or pepper are never brought to table; theſe are only uſed in dreſſing. Their meat is broiled or boiled; and inſtead of bringing a large joint of meat to table, as the Europeans do, they have it all cut into ſquare bits the ſize of dice before it is preſented; nor do they uſe any table-cloth, napkins, ſpoons, knives and forks; inſtead of which, they uſe two little ſhort ſticks of ebony tipped with ſilver, with which they lift their meat very dexterouſly. They hold the cup near their lips, which contains the rice and broth, and convey them into their mouths very expeditiouſly with the ſame ſmall ſticks. They, contrary to the cuſtom of all the other eaſtern nations, have their tables and chairs very high: and, at an entertainment, each perſon has a ſquare table to himſelf, on which meat and rice are ſerved in plate or china cups and ſaucers. The better ſort feed very luxurioufly; they eat their meat cold, but their liquor hot. Tea is their principal liquor, which they always drink without ſugar. In the morning a large tin veſſel is made full of it, to ſerve the family for that day. This tin veſſel is covered very cloſe, and put into another veſſel of wood, which keeps the tea warm all day, and is drawn off into cups by a ſcrew-cock. This coarſer kind is uſed by the family in common, as I could not diſcover they drank any thing elſe. But, when company is in the houſe, every perſon has a cup with a cloſe cover ſet before him, and tea of ſuch kind or quantity as the perſon pleaſes is put into it; after which a ſervant at-

tends with a ſauce-pan of boiling water to pour into each cup.

The water in China is ſeldom drank cold; and indeed it is not very ſafe, till herbs are infuſed into it, or till it is boiled or mixed with ſpirits; for their water is ſeldom pure.

They have no wine, though they have plenty of grapes; nor do they brew any liquor from barley: yet they have ſeveral ſtrong liquors which they make from rice or wheat, of which the moſt common are Hockſhue and Shamſhue: the firſt is of the colour of our Engliſh brown beer, and very ſtrong, and very clear. I am told that it is no other than an infuſion of wheat in ſcalding-hot water; it drinks more like mum than beer. Shamſhue is a ſpirit diſtilled from rice, and is either of a pale or a reddiſh colour. It drinks beſt hot; and our European ſailors, who uſe it much while here, all agree that it is wholeſome, and never cauſes headachs and ſickneſs after it, as their other liquors do, when they get drunk.

The ſeraglio in the court of Peking contains a collection of the moſt beautiful virgins in the empire. Theſe the vice-roys, and governors of the ſeveral provinces make preſents of to the emperor, who uſes them indeed no better than his ſlaves; for they are ſo numerous, that many of them are hardly ever known by him.

The female ſex are excluded from having any ſhare in the civil government and councils. The Chineſe, by way of deriſion, ſtyle Europe "The ladies empire," from the information that women are ſometimes inveſted with ſovereign power in that quarter of the world.

Some of the fair-ſex procure an article in their marriage ſettlement, that they ſhall have liberty to enter-

tain gallants; and in ſuch caſes the lovers reſort as confidently to her apartments as her huſband. But the Chineſe generally hold this practice in ſuch abhorrence, that the children of ſuch women are diſqualified to hold any place, or procure preferment in the ſtate.

Some parents, when they apprehend that they ſhall not be in a condition to maintain their male children, will caſtrate them, in order to provide for them as eunuchs in the emperor's ſeraglio. They are called Gelubden; and no other are permitted to come near the women's apartment, or to attend in the innermoſt courts of the palace. Yea, ſo ſacred are the women's apartments in general, that the huſband's father is not permitted to enter them. And if the father would puniſh his ſon for any offence, which, by the law of China, he may do after marriage, if the ſon eſcapes into his wife's apartment, he is as ſafe as in a ſanctuary. If daughters are not married in their father's life-time, their brethren are obliged by law to provide for them.

The women employ themſelves in painting, embroidery and needle-work, but never meddle with trade or merchandize. In their retirement, they keep collections of birds, dogs, and other entertaining animals, to amuſe them.

The Jeſuits ſo greatly extol the piety of the female converts that they had proſelyted here, that they tell us, if China ſhould once embrace Chriſtianity, all the female ſex would be ſaved.

It is ſaid that the Chineſe ladies rub their faces every morning with a kind of paint that ſets off the whiteneſs of their complexion, and gives them a colour, but preſently ſpoils their ſkin, and makes it full of wrinkles.

Among the charms of the ſex the ſmallneſs of their

feet is not the leaſt; when a female infant is born, the nurſes are very careful to bind its feet quite cloſe, leſt they ſhould grow too large. The Chineſe ladies are ſubject all their lives to this conſtraint, which they were accuſtomed to when in their childhood, and their gait is unſteady, ſlow, and diſagreeable to foreigners: yet ſuch is the force of cuſtom, that they not only undergo this inconvenience readily, but they increaſe it, and endeavour to make their feet as little as poſſible, thinking it an extraordinary charm, and always affecting to ſhew them as they walk.

It is hard to imagine what is the reaſon of ſuch an odd cuſtom, for the Chineſe themſelves do not pretend to be certain, looking upon that ſtory to be fabulous, which attributes the invention to the ancient Chineſe, who, to oblige their wives to keep at home, are ſaid to have brought little feet into faſhion. The major part think it to be a public deſign, in order to keep the women in conſtant dependance. It is very certain that they ſeldom ſtir out of their apartment, which is in the moſt inward part of the houſe, having no communication with any but the women-ſervants.

However, they have, generally ſpeaking, the common vanity of the ſex, and though they are not to be ſeen but by their domeſticks, they ſpend ſeveral hours every morning in dreſſing and adorning themſelves.

The Chineſe love to be clean and neat in their houſes, but they have nothing very magnificent; their architecture is not at all elegant, and they have no ſtately buildings but the emperor's palaces, publick edifices, towers, triumphal arches, the gates and walls of the great cities, piers, cauſeways, bridges, and pagods. The houſes of private perſons are very plain, for they have no regard to any thing but uſefulneſs. Thoſe that are rich add ornaments of Japan work,

ſculpture, and gilding, which render their houſes very pleaſant and agreeable.

They for the moſt part begin with erecting their pillars and placing the roof thereon, becauſe the greateſt part of their building being of wood, they have no occaſion for laying a foundation low in the ground, the deepeſt is about two foot; they make their walls of brick or clay, and in ſome places they are entirely of wood: theſe houſes are generally nothing but a ground-floor, though thoſe of the merchants have frequently one ſtory above it called Leou, where they place their goods.

The greateſt part of the houſes in the cities are covered with tiles, which are half guttered and very thick; they lay the convex part downward, and to cover the chinks in thoſe places where the ſides meet, they lay on new tiles in a contrary poſition. The ſpars and joiſts are either round or ſquare; upon the ſpars they lay very ſlender bricks in the ſhape of our large quarrels, or ſmall pieces of boards, or matts made of reeds, which are plaiſtered over with mortar; when it is a little dry they lay on the tiles; thoſe who are able to be at the expence, join the tiles together with mortar made of lime.

In the generality of their houſes, when you are through the porch, there is a hall toward the ſouth about thirty or thirty-five foot long; behind the hall there are three or five rooms to the eaſt and weſt, the middle room of which ſerves for an antichamber; the roof of the houſe is ſupported by pillars in the following manner; for inſtance, if the hall be thirty foot long it will be at leaſt fifteen broad, and then twenty-four pillars ſupport the roof forward, and the ſame number backward, and one at each end; every pillar is erected upon ſtone baſes, and they ſupport the large

beams laid lengthwiſe upon them, and between every two pillars they put a beam or piece of wood acroſs; upon the great beams, and on the two pillars at the ends, they lay other pieces of wood that ſupport the bulk of the roof, after which they begin to build the walls; the pillars are commonly ten foot high. The magnificence of the houſes, according to the Chineſe taſte, conſiſts in the thickneſs of the beams and pillars, in the excellency of the timber, and in the curious carving on the gates. They have no other ſtairs than what are before the door, which conſiſts of a few ſteps above the level of the ground: but along the ſide of the houſe there is a cloſe gallery, about ſix or ſeven foot wide, and caſed with beautiful free-ſtone.

There are ſeveral houſes where the gates in the middle of each ſide of the houſe anſwer to one another. The houſes of the commonalty are made of unburnt brick; in ſome places they are made with tempered earth, and in others there are no walls at all, except what are made of hurdles covered with lime and earth.

But among perſons of quality the walls are made of poliſhed bricks, very curiouſly carved. In the country towns, eſpecially in ſome provinces, the houſes are chiefly made of earth, being very low, and the roof makes ſo obtuſe an angle, that it ſeems almoſt flat; it is compoſed of reeds covered with earth, and ſupported by matts of ſmall reeds that lie upon the pannels and joiſts. There are ſome provinces where they make uſe of coal, or elſe reeds or ſtraw inſtead of fire-wood. As they uſe ſtoves with ſmall chimneys, and ſometimes none at all, if the coal is burnt in other rooms beſides the kitchen, you are almoſt ſtifled with the ſmell, and more ſo if the fuel be reeds, which is unſupportable to thoſe who are not uſed to it.

The houſes of the nobility and rich people, if compared with ours, do not deſerve to be mentioned; it would be an abuſe of the term to call them palaces, they being nothing but a ground-floor raiſed ſomething higher than common houſes; the roof is neat, and the out-ſide of it has ſeveral ornaments; the prodigious number of courts and apartments, fit to lodge their ſervants, make amends for their meanneſs and want of magnificence.

The Chineſe, notwithſtanding all this, are not haters of pomp and expence, but the cuſtom of the country, and the danger there is in doing things out of the common road, reſtrain them contrary to their inclinations. The tribunals of juſtice have nothing very extraordinary in them: the courts are large, the gates lofty, and ſometimes adorned with carved work ſufficiently neat, but the inner rooms and places of audience have neither grandeur nor neatneſs.

The chief ornaments that their halls and apartments are adorned with being well kept, appear very beautiful and neat to the ſight: there are large ſilk lanthorns painted and hung up to the ceiling, tables, cabinets, ſcreens, chairs handſomely varniſhed with red and black, ſo very tranſparent that you ſee the veins of the wood through it; and as bright as the ſurface of poliſhed glaſs; variety of figures of gold and ſilver, or other colours painted upon this japan give it a new luſtre: beſides the tables, the buffets and cabinets are adorned with the fine china-ware, which is ſo much admired, but could never be imitated in Europe.

Beſides this they hang up in ſeveral places pieces of white ſattin, on which are painted flowers, birds, mountains and landſkips; on others they write in large characters moral ſentences, wherein there is always ſome obſcurity; they are taken out of hiſtories, and have fre-

quently a diffetent ſenſe from the natural: theſe ſentences are commonly by pairs, and are conceived in the ſame number of letters. Some are contented with whitening their rooms, or papering the walls, in which the Chineſe are very ſkilful.

The great men in China follow the example of the weſtern Aſiatics, in keeping eunuchs to attend them; who are their counſellors, and chief confidents on all occaſions. Their buſineſs is to take care of the women, and being in a manner detached from the world, they are greatly reſpected. Caſtrating is a trade in China; and ſo ſkilful and dexterous are the performers, that few die under their hands. I was acquainted with a man who, being reduced to low circumſtances, ſold himſelf to be made an eunuch, after he was thirty years old.

All the people of faſhion in China cauſe their coffins to be provided in their life-time, and thoſe of the higher rank cauſe their tombs to be built; and each family has a particular burying-place, to which the deceaſed of that family, though dying at a great diſtance, muſt be brought. The burying-places of the common people are without the city; they are generally buried promiſcuouſly. By their law, the corpſe of a perſon who had died in the country, muſt not be brought within the walls of the city, nor is any burying-place allowed within the walls. Their coffins, which are commonly varniſhed, and ſometimes carved and gilded, are made of a durable wood, upwards of ſix inches in thickneſs.

When a man of fortune dies, his neareſt relation informs all his friends of it: they convene, they waſh and perfume the corpſe, and dreſs the deceaſed in the beſt cloaths he uſed to wear. Then placing the dead body, thus dreſſed, in a chair, the wives firſt, then the

children, and afterwards the relations and friends of the deceaſed, proſtrate themſelves before the corpſe, and paſſionately bewail their loſs. The third day the body is put into a coffin, covered with a piece of ſilk, and placed in a large room, which is hung about with white linen, and has an altar erected in the middle of it, with a picture or ſtatue of the deceaſed placed upon it. The relations are again introduced, bringing with them wax lights and incenſe, which they burn upon the altar, and again proſtrate themſelves before it. Meantime all the ſons of the deceaſed, cloathed in linen, and girt about the middle with a cord, ſtand on one ſide of the coffin, in a mournful poſture; while the mothers and the daughters ſtand on the other ſide, behind a curtain, lamenting in ſuch ſtrains as cuſtom requires; the attending prieſts all the time ſinging mournful ſongs. During the time of keeping the corpſe, there are tables well furniſhed every morning, and the prieſt is butler at night. A large ſheet of paper is hung over the gate, expreſſing the name and quality, and giving a ſhort detail of the life and great actions of the deceaſed. The corpſe is ſometimes thus kept for months, and all the ſons of the deceaſed ſleep about his coffin on matts or plaids. They taſte neither fleſh nor ſtrong drink, nor come near their wives, all this time. Yea, ſo ſuperſtitious are they in performing the funeral rites, that their law prohibits the ſons of the deceaſed to be at any entertainment, or to be concerned in any buſineſs for the ſpace of three years after the father's death; and, though a man were poſſeſſed of the higheſt place in the government, he is obliged to leave it on ſuch occaſion for three years, and to retire to his own houſe, where it is eſteemed an indecency to indulge himſelf in any pleaſure, or even to be ſeen to laugh. The ſoldiers and Mandarines of

the military order are the only perſons exempted from this lengthned mourning for a father.

Upon the day appointed for the burial of the corpſe, the relations are aſſembled the third time, to follow the deceaſed to the place of interment. In the proceſſion, firſt, ſeveral images of men, women, elephants, lions, and other animals, which are made of painted paper, in order to be burnt at the grave, are carried in the front. Next, figures of triumphal chariots, caſtles, and the like, are ſupported by men under them, attended by tables of rich perfumes and meats. After which follow the prieſts in their robes, with drums, muſick, and bells. Then the coffin, carried by twenty or thirty men under a canopy, and followed by the ſons on foot, leaning on crutches, as if they were ſcarcely able to ſupport themſelves. After them come all the mothers and daughters carried in cloſe chairs, covered with white ſilk or linnen; and though they cannot be ſeen, they deafen the company with their perpetual howling, and ſometimes other women are hired to howl on ſuch occaſions.

Mountains, and ſolitary places far from towns, are choſen for the ſeat of the tombs and ſepulchres of the great, ſome of which are very magnificent. If a tomb is erected in a valley or plain, a vaſt heap of earth is accumulated over it, to the height of a mount. The tomb is an arched vault, about the ſize of an ordinary cottage, covered with Paris-plaiſter, ſo as no moiſture can penetrate. A wide door opens in the entry to it, and two ſmaller ones on each ſide. In the vault an altar is erected, lights are placed, and the friends and relations proſtrate themſelves before it, with their faces to the ground. On this altar they pour out wine, offer meats, and burn incenſe, with the pictures of men and animals on gilded paper, which they imagine, are

converted into the things they are made to repreſent, and that they will be of ſervice to the dead in another ſtate. And if the deceaſed has held any conſiderable office, his virtues and illuſtrious actions, real or imaginary, are engraved on marble, and ſet up in the vault before the altar.

One chief reaſon of the diſlike of the Chineſe to all foreigners, is, becauſe they leave the tombs of their anceſtors to go to diſtant climates; but the Chineſe have ſuch veneration for the burying-place of their fathers, that neither curioſity nor the love of gain can allure them to travel into remote parts of the world. They even deſpiſe their own countrymen, who, from neceſſity, or on account of trade, go to Sunda, or other iſlands, to reſide; becauſe there they imagine they muſt leave their bones in unhallowed ground. It is little wonder therefore, that the Chineſe are ſo ſeldom to be met with in very diſtant nations.

If a huſband dies, the wife muſt mourn three years; and it is accounted infamous for her to marry again.

Funeral pomp and ceremony is here ſo much regarded, that the emperor himſelf, though he beſtows no hereditary honours on any of his ſubjects while living, frequently confers honours and titles on ſuch as he thinks have deſerved well, after their death. The preſent emperor's father, I was told, had beſtowed a great many honours on a favourite popiſh miſſionary, who had ſerved him in quality of a Mandarine and preſident of the college of the *literati*. At his funeral there was an odd mixture of popiſh and pagan ſuperſtition. One of the miſſionaries ſays, that the emperor wrote with his own hand the following encomium upon him. "Whereas father Verbieſt left Europe to come into "my dominions, and ſpent the beſt part of his life in "my ſervice, and, during all the time he preſided o-

" ver the mathematicians, his predictions never failed, " but agreed exactly with the motions of the heavens; " and as he was ever faithful and indefatigable in his " labours till he had finished his course; therefore I " ordered my own physician to attend him; and as soon " as I knew that a deep sleep had seized him, my heart " was wounded with inexpressible grief. I have there- " fore ordered two hundred golden crowns towards his " funeral charges; and it is my pleasure that this de- " claration be published, to testify the sincere affection " I had for father Verbiest."

The corpse of the Jesuit was laid in state after the Chinese manner. Two Mandarines were dispatched by the emperor, with the above instrument. They kneeled before the coffin, and, with apparent weeping and lamentation, bowed their head several times to the ground. Then they rose, and read the emperor's declaration. The great lords of the court, in imitation of the emperor, wrote panegyricks upon the missionary. These were written upon white sattin, and hung round the room; but the emperor's was wrote on a large piece of yellow sattin, and hung near the corpse. The morning of the day appointed for the burial, the emperor sent his father-in-law, to represent his person. A chief Mandarine, a gentleman of the bed-chamber, and five officers of the household, attended him. They all prostrated themselves before the corpse, and seemed to weep bitterly; for I am told not even the fair sex themselves have a greater command of their tears than the Chinese courtiers. In the front of the funeral procession, a trophy thirty feet high was carried, on which the name and titles of honour of the missionary were written in large golden letters. In the second order a large red cross, decorated with flags and streamers, was carried by two files of Christians, cloathed in white,

each having a lighted taper in one hand, and a handkerchief in the other to receive his tears. Next followed the picture of the Virgin Mary in a large frame, ſupported by ſome Chineſe converts; and after it, the image of St. Michael. The emperor's encomium, carried like a military ſtandard, and ſurrounded by a crowd of Chriſtians, followed. After theſe came the coffin, varniſhed and gilt after the manner of the country, ſupported on a bier by ſixty people. And laſtly, the popiſh miſſionaries, the lords deputed from court, and a multitude of Mandarines, cloſed the proceſſion. At the tomb the miſſionaries read prayers, ſprinkled the corpſe with what they call holy water, and perfumed it with incenſe. After the corpſe was let down into the vault, the miſſionaries remained on their knees, to hear what the emperor's father-in-law had to ſay to them. He declared to them, that father Verbieſt had been ſo ſerviceable to the emperor and the ſtate, that he was deputed, with the lords preſent, to make this publick acknowledgment, that all the world might know the affection the emperor had for him whilſt he lived, and how much he bewailed his death. The miſſionaries paid their reſpects to him, in return, by a handſome ſpeech. The court of rites finding how acceptable it would be to the emperor to confer ſome further marks of honour on this miſſionary, they ordered ſeven hundred golden crowns to be laid out in adorning his tomb, and in engraving the emperor's encomium on a marble ſtone.

Of the DRESS *of the* CHINESE.

THE head-dreſs of the Chineſe ladies conſiſts of ſeveral curls interſperſed with little tufts of gold and ſilver flowers. Some of them adorn their heads with the figure of a bird called Fong hoang, a fabulous bird, ſeveral myſterious things concerning which are to be found in antiquity. Some of theſe birds are made of copper, others of ſilver gilt, according to the perſon's rank: Its wings extended lie pretty cloſe on the fore-part of their head-dreſs, and embrace the upper part of their temples; its long ſpreading tail makes a kind of plume on the middle of the head, the body is directly over the forehead, the beak and neck is joined to the body of the animal by a concealed hinge, in order that it may eaſily play and anſwer to the leaſt motion of the head. The whole bird lies principally upon the head, and the claws are fixed in the hair. Ladies of the firſt quality commonly have an ornament of ſeveral of theſe birds united together, which form a kind of crown; the workmanſhip of this ornament is very expenſive.

The young ladies for the moſt part wear a kind of crown made of paſteboard, and covered with fine ſilk; the fore-part of this crown riſes in a point above the forehead, and is covered with diamonds, and other ornaments; the upper part of the head is adorned with flowers either natural or artificial, mixt with ſmall bodkins, the ends of which ſhine with jewels. Elderly women, particularly thoſe of the common ſort, are contented with a piece of fine ſilk wrapt ſeveral times

round the head, which they call Pao teou, which means, A wrapper for the head.

The uncommon modeſty which appears in the looks and dreſs of the Chineſe ladies ſets off their natural charms; their gowns are very long, and cover them from head to foot in ſuch a manner that nothing can be ſeen but their face. Their hands are always concealed under long wide ſleeves, that would almoſt drag on the ground if they were not careful in keeping them up. Their garments are of various colours, red, blue, or green, according to their fancy; but violet or black is worn by none but elderly ladies.

What we in Europe, where the dreſs is ſubject to ſo many changes, call the faſhion, is quite a different thing in China; for they have had but one kind of dreſs from the beginning of the empire till the Tartars ſubdued it, who, without changing the antient Chineſe government, have only made them dreſs in the manner they did.

The men's garments are made agreeable to the gravity they ſo much affect; they wear a long veſt which reaches to the ground, having one lappet folded over the other in ſuch a manner that the upper lappet reaches to the right ſide, where it is faſtened with five or ſix gold or ſilver buttons at a ſmall diſtance from each other. The ſleeves that are large towards the ſhoulder grow narrower by degrees towards the hand, and end in the ſhape of a horſe-ſhoe, which cover their hands, and hide every thing but their fingers from being ſeen. They gird themſelves with a large ſilken ſaſh, the ends of which hang down to the knees.

The Tartars ſtick a handkerchief to it on both ſides, with a ſheath for a knife and fork, and tooth-pick, a purſe, and other pretty implements. In ſummer their

neck is all bare, which looks very ill, in winter they cover it with a collar of ſattin faſtened to the veſt, or with a tippet of ſable or fox-ſkin, about three or four fingers broad, which is faſtened before with a button, which is very decent, and becomes horſemen wonderfully.

The Chineſe are always booted, and when any one pays them a viſit, if they chance not to have their boots on, they make them wait till they go fetch them.

The form of theſe boots is ſomewhat different from ours, for they have neither heel nor top; when they ride any long journey, they are made of obſolete, old faſhioned leather, or thick, black, pinked cotton; but in the city they uſually wear them of ſattin, with a coarſe border of pluſh or velvet upon the knee. The people in public, and perſons of quality within doors, are inſtead of ſhoes, ſhod with pattins of black linnen, or ſome pretty ſilk, very convenient; they ſtick cloſe to the foot of themſelves, by a border that covers the heel, without needing to tie them before.

In the ſummer-time they wear a pair of linnen drawers under the veſt, which they ſometimes cover with another pair of white taffety, and during the winter they wear ſattin breeches, with cotton or raw ſilk quilted in them, but if it be in the northern parts they are made of ſkins which are very warm. They make their ſhirts of different kinds of cloth, according to the ſeaſon, and are very wide and ſhort; and, to keep their garments clean from ſweat during the ſummer ſeaſon, ſeveral wear a kind of ſilken net next to their ſkin, which prevents their ſhirt from ſticking to it.

Their veſt in the winter is lined with ſheep-ſkin, though there are ſome who wear it only ſtitched with ſilk and cotton; people of quality line it quite thro'

with ſable imported from Tartary, or fine fox-ſkin with a border of ſable. They line them with ermine in the ſpring; and over the veſt they wear a ſurtout with large ſhort ſleeves, which are lined and bordered the ſame way.

The Chineſe formerly greaſed their hair very much, and were ſo fond of this ornament, that after their country was ſubdued, and the Tartars obliged them to ſhave the head, ſeveral choſe rather to die than obey the conquerors in this point, though their maſters did not alter the other cuſtoms of the nation. At preſent they have their heads ſhaved, except on the hind part or in the middle, where they ſuffer it to grow as long as they think proper.

In ſummer they wear on their heads a kind of ſmall hat or cap, made in the ſhape of a funnel; the inſide is lined with ſattin, and the outſide is covered with rattan or cane very finely wrought; a large tuft of red hair is put to the top of the cap, which ſpreads to the very edges, and covers it: This hair is very fine and light, and grows between the legs of a kind of cow, and is dyed of a very bright red; this is very much in faſhion, and allowed to be worn by all ſorts of people.

There is another that the vulgar are prohibited from wearing, it being proper to Mandarines and men of letters, of the ſame faſhion as the others, but made of paſteboard between the two ſattins, the inſide of which is generally red or blue, the outſide is white ſattin covered with a large tuft of the fineſt red ſilk. People of diſtinction make uſe of the former when they chuſe, but eſpecially on horſeback when the weather is bad, becauſe it keeps out rain, and prevents the ſun from troubling them.

They wear in the winter a very warm ſort of cap bordered with ermine, ſable, or fox-ſkin, the upper part of which is covered with a tuft of red ſilk. This border of fur is two or three inches broad, and looks very pretty, eſpecially when it is made of fine black ſhining ſable, and coſts forty, and ſometimes fifty taels.

When they viſit any perſon of quality, or go abroad, they wear a long ſilk gown, for the moſt part blue, girded about them, over which they have a black or violet cloak that almoſt touches their knees, which is very wide, and has very wide and ſhort ſleeves, and alſo a little cap made in the faſhion of a ſhort cone, covered with tufts of ſilk or red hair, a fan in their hand, and ſtuff boots on their legs.

The colour of their mourning is white among princes as well as mechanics; thoſe who have a compleat mourning habit have their cap, veſt, gown, ſtockings, and boots all white. In their firſt months of mourning for their parents their habit is a kind of linen bag of a bright red colour, and as coarſe as a packing-cloth; their girdle is a kind of cord, and their cap of a very odd figure is likewiſe hempen cloth. This melancholy and negligent outſide they affect to diſcover their inward ſorrow for being bereft of ſo dear a friend.

The ſoldiery in China are dreſſed moſt in blue Nanking ſtuff, their gowns ſhort and narrow, with rattan caps on their heads, and a bunch of red hair fixed on the top of them; which, when they perform any quick motion, or are agitated by the wind, make a grand appearance, eſpecially when four or five thouſand of them are marching in a body. Their boots are made of ſilk, and lined with cotton. Their principal arms are the ſword and the bow.

Their ſwords, which are very large, heavy and broad, they wear on their left ſide, but with the handle behind, and the point hanging down forwards. When they draw them, they with their left hand take hold of the lower end of the ſcabbard, and lift up the ſword behind them ſo high, as that the handle may reach above the ſhoulder behind; ſo that, at the drawing the ſword with the right hand over the left ſhoulder, they can make a nimble and ſevere ſtroke. However impoſſible or inconvenient this may ſeem to thoſe who have not ſeen it performed, yet it is abſolutely certain, that they do it with great eaſe and agility, the effect, no doubt of conſtant practice.

Their bows are very large and ſtrong. They carry them in a caſe on their left ſide, and a caſe of arrows on their back. On their right thumb they wear a broad and thick ivory or agate ring, upon which they place the ſtring when they draw: and they have another ring on the left thumb for the arrow to run upon when they ſhoot.

Of the FESTIVALS *and* DIVERSIONS *of the* CHINESE.

AMONG the feſtivals of the Chineſe there are two principal ones that are celebrated at a prodigious expence; the one is the beginning of their year, and the other, which is on the fifteenth of the firſt month, is what they call The Feaſt of Lanthorns. All buſineſs is then ſtopt, and the tribunals are ſhut up throughout the empire.

This is a time of great merriment, eſpecially at the concluſion of the old year, and the vacation laſts a whole month. Their inferior Mandarines go to ſalute the ſuperior, the children their fathers, ſervants their maſters, &c. In the evening the whole family meet together, and a great feaſt is made. Some of them are very ſuperſtitious, and will not admit a ſtranger among them, nor yet one of their own neareſt relations, for fear that the moment the new year begins they ſhould take the happineſs which ſhould deſcend on the houſe, and carry it away to the prejudice of their hoſt: On this day every one cloſes himſelf up in his own houſe, and rejoices with his family; but on the next and following days, they give demonſtrations of extraordinary gladneſs, all the ſhops are ſhut up, and every body is employed in feaſts, ſports and plays; the meaneſt mechanic on this day dreſſes himſelf in his beſt cloaths; the wealthy dreſs themſelves ſumptuouſly, and viſit their friends and relations, and all thoſe whoſe favour they court: They act plays, treat each other, and mutually wiſh all kinds of proſperity; in ſhort, the whole em-

pire is in motion, and nothing is heard but mirth, pleaſure, and joy.

The fifteenth of the firſt month is alſo a ſolemn feſtival, and every place throughout the empire is ſo illuminated, that if one could take a view of it from ſome high place all the country would ſeem to be on fire. The feſtival begins on the thirteenth in the evening, and is continued to the ſixteenth or ſeventeenth; every perſon, both in city and country, on the ſea-coaſt, or on the rivers, light up painted lanthorns of ſeveral faſhions; the pooreſt houſes that are have them hung up in their courts and at their windows, every one being deſirous to diſtinguiſh himſelf; the poor do it at a ſmall expence, thoſe that are rich lay out ſometimes two hundred Franks, and the chief Mandarines, the viceroys, and the emperor expend on this occaſion three or four thouſand livres.

It is a ſpectacle to all the city, people flock thither from all parts, and to ſatisfy them the gates of the city are left open every evening; they are permitted to enter into the tribunals of the Mandarines, who take care to adorn them in a ſplendid manner to give a notion of their magnificence.

Theſe lanthorns are very great, ſome are compoſed of ſix parts; the frame is made of japanned wood, adorned with gilding; on every ſquare they ſpread ſome fine tranſparent ſilk, on which is painted flowers, trees, animals, and human figures; others are round and made of tranſparent horn, of a blue colour, and extremely handſome; they put in theſe lanthorns ſeveral lamps, and a great number of candles, whoſe light make the figures look very lively; the top of the machine is covered with diverſe carved works, from whence hang ſeveral ſtreamers of ſattin and ſilk of diverſe colours.

Several of them repreſent ſpectacles very proper to amuſe and divert the people; you ſee horſes galloping, ſhips ſailing, armies marching, dancings, and ſeveral other things of the ſame nature; people who lie concealed, by means of imperceptible threads, put all theſe figures in motion.

At other times they cauſe ſhadows to appear that repreſent princes and princeſſes, ſoldiers, buffoons, and other characters, whoſe geſtures are ſo conformable to the words of thoſe who move them with ſo much artifice, that one would think the ſhadows ſpoke in reality: There are others who carry a dragon full of lights from the head to the tail, from ſixty to eighty foot long, which makes the ſame windings and turnings as a ſerpent would do: That which gives a new ſplendor to this feaſt are the fireworks which are ſeen in all parts of the city, for it is in this the Chineſe are thought to excel. F. Magaillaens relates, that he was extraordinarily ſurprized with one of theſe fireworks, where a vine-arbour with red grapes was repreſented, and the arbour burnt without being conſumed; the foot of the vine, the branches, leaves, and grapes, were conſumed exceeding ſlowly; there was the appearance of red grapes, green leaves, and the colour of the wood of the vine was repreſented ſo naturally, that any perſon might have been deceived by it: But theſe matters may be judged of more exactly from the deſcription of one that the late emperor Chang hi cauſed to be made for the diverſion of the court; thoſe of the miſſionaries who were in waiting were witneſſes of it: The fireworks began with half a dozen large cylinders planted in the earth, which formed in the air as many ſtreams of flame that roſe up to the height of twelve foot, and fell down again in golden rain or fire; this ſpectacle was followed by a covered firework carriage,

ſupported by two ſtalks or pillars, from whence proceeded a ſhower of fire, with ſeveral lanthorns, and ſentences wrote in large characters of the colour of burning ſulphur, and afterwards half a dozen of branched candleſticks in the form of pillars, of diverſe ſtories of lights placed in a circle, the light of which was like ſilver, which in a moment turned night into day; at length the emperor, with his own hands, ſet fire to one of the works, and in a ſhort time it was communicated to all ſides of the place, which was eighty foot long, and forty or fifty broad: The fire was faſtened to ſeveral poles, and paper figures placed on all ſides, from whence proceeded a prodigious number of rockets playing in the air, with a great number of lanthorns and branched candleſticks that were lighted in every place.

This ſport laſted for half an hour, and from time to time there appeared in ſome places violet and bluiſh flames in the form of bunches of grapes in a vine-arbour, which, joined to the ſplendor of the lights that ſhone like ſo many ſtars, yielded a very agreeable ſight.

Among the ceremonies that were obſerved there was one very remarkable: In the greater part of the houſes the heads of each family wrote in large characters on a ſheet of red paper or japanned board the following words, "Tien ti, San kiai, Che fan, Van lin, "Tchin teai;" the ſenſe of which is this: "To the "true Governor of heaven and earth, and the three li-"mits, [that is, Of the whole world], and to the ten "thouſand intelligences." This paper is put into a frame, or paſted to a board; they place it on a table in the court, on which is ſet corn, bread, meat, and ſuch like things, then proſtrating themſelves on the earth they offer ſticks of paſtils.

Gaming, though prohibited by the Chineſe laws, is much practiſed amongſt them, and there are inſtances of thoſe who have followed it ſo immoderately, that they have played away their eſtates, wives and children; any of which they will ſometimes hazard upon a card, or a ſingle caſt of a die.

The Chineſe call cheſs The game of the elephant, and ſay that they had it from the Indians in the reign of Vouti, about the year of Chriſt 537.

In China young maids are taught cheſs; and it is reckoned a part of their education; ſo that it ſeems to hold the ſame place with them that dancing does with us.

It is a common thing for the Chineſe to act a play before their idols, after their worſhip is over. I have ſeen ſeveral acted in different Joſs-houſes, and every body is welcome to ſee them gratis. Sometimes theſe ſmaller temples are ſo crowded by the poorer ſort of people among the Chineſe, that an European can ſcarcely get in. In ſummer the people are moſtly naked; and, as they ſtand cloſely together the whole time, there is ſuch heat, ſweat, and ſtench, that an European cannot ſet his noſe within doors.

I have frequently ſeen plays acted upon open ſcaffolds erected in the public ſtreets of Canton: and thoſe in half a dozen ſtreets at a time. Their actors are richly dreſſed, and have a large ſtock of dreſſes and military arms and trinkets.

Their coſtly dreſſes, &c. are kept in ſquare cheſts. In the temples they have dreſſing-rooms; on each ſide the ſtages they have ſcreens. They have few or no painted ſcenes, &c. Perſons wait within the ſcreens ready to dreſs or undreſs them as occaſion requires.

When they act in the ſtreet, they are paid by the

inhabitants of that ſtreet; when they act in temples, it is at the charge of the members of the temple, or him who, on any particular occaſion, employs them. As none of the fair ſex are allowed to appear on a ſtage, they employ young men or boys of an effeminate air and countenance to act the woman's part. Some companies of actors conſiſt of men from twenty to forty years of age: and theſe are in the moſt eſteem among the Chineſe. Others conſiſt of young men between twelve and eighteen; and theſe are moſt eſteemed by the Europeans. They have both tragic and comic performances. Theſe, eſpecially the firſt, they ſeem to act with great propriety both of geſture and expreſſion. They repreſent the workings of the paſſions ſo naturally, that they often affect very ſenſibly even an European ſpectator, though ignorant of the language with which this action is accompanied.

The ſubject of their plays is generally the life and heroic actions of ſome brave man among their anceſtors. Some of my Chineſe acquaintance told me, that theſe plays were inſtituted, and often repeated, to recommend bravery and virtue, and to ridicule vice; and to give the mob an idea of the conſtitution, the different degrees of dignity in the empire, and the authority and manners of the court; which, in ſuch an extenſive empire, the common people could not be otherwiſe informed of.

The whole ſtreets are ſo filled on theſe occaſions with a pleaſed and attentive crowd, that you cannot paſs by. When an actor plays his part well, the mob all unite in calling him to return to the ſtage, and react his part. I have ſeen young boys, reſembling women, in beauty, effeminacy and dreſs, act the female's part ſo well, that the mob obliged them to act it three times over before they were allowed to leave the ſtage.

The plays are generally concluded with tumbling, fighting, or combating with giants or wild beaſts; or elſe with ſome humorous poſtures, geſtures, and expreſſions, calculated to raiſe a laugh.

When the emperor goes a hunting, he makes choice of three thouſand of his life-guards, who are armed with darts and javelins. Theſe he diſperſes in ſuch a manner, that they quite ſurround a very large extent of ground on the mountains. The life-guards thus poſted form a kind of circle, the diameter of which is three thouſand paces at leaſt. Marching afterwards nearer to each other with an equal pace; taking care not to quit their ranks, what obſtacles ſoever they might meet with (the emperor having mixed among them captains, and even ſeveral great men of the court, to keep them in order) the circle in queſtion is thereby reduced to a much ſmaller one, the diameter thereof not being above three hundred paces. Thus the ſeveral beaſts which had been comprized in the firſt circle, are taken by this ſecond, as in a net; for now the life-guards alighting from their horſes, keep ſo very cloſe one to another, that not the ſmalleſt outlet is left for any wild beaſt to eſcape. They then hunt them ſo cloſe within theſe narrow bounds, that the poor creatures being quite ſpent, come and fall down at the feet of the hunters, and are thus taken with all imaginable eaſe. Some days they will take two or three hundred hares, beſides a prodigious number of wolves and foxes.

Among the many tricks and feats performed by theſe people, I ſhall only mention thoſe which ſeem moſt uncommon. The roof of the room where the jugglers perform is ſupported by wooden pillars. One of them took a gimlet, with which he bored one of the pillars, and aſked, whether we choſe white or red

wine? The queſtion being anſwered, he pulled out the gimlet, and put a quill in the hole, thro' which ran, as from a caſk, the wine demanded. After the ſame manner he extracted ſeveral ſorts of liquors, all which I had the curioſity to taſte, and found them good of their kinds. Another of theſe expert youths took three long ſharp-pointed knives, and, throwing them up by turns, kept one always in each hand, and the third in the air. This he continued to perform for a conſiderable time, catching conſtantly the falling knife by the handle, without ever allowing it to touch the floor. The knives were exceeding ſharp, ſo that, had he miſſed laying hold of the handles, he muſt infallibly have loſt ſome of his fingers. The ſame perſon took a wooden ball, ſomewhat leſs than thoſe commonly uſed in bowling-greens, with a hole through the middle of it, and a rod two foot long, about the ſize of a walking-ſtaff, pointed at the extremity, to fit the hole in the ball. He then toſſed the ball about a yard high, and caught it again upon the point of the rod, not in the hole of the ball, but wherever it happened to meet the point: And, in this manner, he continued to throw up and catch the ball for a conſiderable time. He then placed the ball upon the point of the rod, taking no notice of the hole, and twirled it about like a top, ſo quickly, that the motion could not be obſerved. This ſeemed extremely dexterous, for, all the while, he played with the ball in appearance, and when the motion began to ſlacken, gave it a freſh twirl with his hand, as if the rod and ball had been faſtened to each other. There were placed erect, upon the pavement of the room, two bamboos. The length of them was about twenty five feet; at the lower end I reckon them to be near five inches diameter, and at the top, about the breadth of a crown piece. They

were ſtraight, light, and ſmooth; and each ſupported by two men. Two boys then climbed up the poles without the leaſt aſſiſtance; and having reached the top, ſtood upright, ſometimes on one foot and ſometimes on the other, and then upon their heads. This being done, they laid one hand on the top of the pole, and ſtretched out their bodies almoſt at right angles to it. In this poſture they continued for a conſiderable time, and even ſhifted hands. I obſerved that much depended on the men who held the poles; one of the two at each pole having it fixed to his girdle; and they kept a ſteady eye on the motion of the boys.

One day in the ſtreet I ſaw a juggler diverting a crowd with a number of tricks: he took an handful of ſmall pieces of copper, with holes in the middle of them, and laid them on a table; he then thruſt them into his noſtril, one by one with his finger; and this he continued to perform till the whole was exhauſted. After this, he ſuſpended an iron chain, of round links, about four feet long; then he took a mouſe out of a box, and made it dance upon the table, quite looſe. Then the mouſe, at his order, went in at one link of the chain, and out at another, till it aſcended to the top; from whence it came down again, the contrary way, without miſſing ſo much as one ſingle ring. I am fully perſuaded, that in tricks, and feats of dexterity, few nations can equal, and none excel, the Chineſe.

Of the Grandeur of the CHINESE *in their* TRAVELLING; *their* TRIUMPHAL ARCHES, TOWERS, &c.

IT is almoſt impoſſible to deſcribe the prodigious grandeur of the emperor and his court, together with the magnificence of the Mandarines; one cannot but be amazed to ſee nothing but ſilks, China-ware, furniture, and cabinets, which though not more rich, yet ſtrike the eyes more than things of the ſame ſort do in Europe: But it is not in this that the principal magnificence of the Chineſe nobility conſiſts, for they commonly neglect themſelves at home, and the laws baniſh luxury and pomp from thence; it is only allowed when they are ſeen in public, when they make or receive viſits, or when they appear before the emperor.

To ſay the truth, the horſes are not very beautiful, but their harneſs is magnificent, the bits and the ſtirrups being either ſilver or gilt; the ſaddle is very rich, the reins of the bridle are made of ſtitched ſattin two fingers broad; from the upper part of the cheſt hang two large tufts of fine red hair, the ſame as that with which their caps are covered; theſe tufts are ſuſpended by iron rings either gilt or ſilvered: They are always preceded and followed by a great number of horſemen, who make their retinue, without reckoning their domeſtics, who, according to the quality of their maſters, are cloathed in black ſattin, or dyed callicoe.

But the Chineſe magnificence is in the higheſt ſplendor at the time the emperor gives audience to ambaſſadors, when ſitting upon his throne he beholds at his

ſeet the great lords of the court, and all the chief Mandarines in their ſolemn robes, paying him homage. It is a ſpectacle truly auguſt to ſee a prodigious number of ſoldiers under arms, and an inconceivable multitude of Mandarines habited according to their rank and precedence in exact order, with the miniſters of ſtate, the heads of the ſupreme courts, the reguloes and princes of the blood: all this performed with a great deal of pomp and ſplendor, gives the higheſt notion of the ſovereign to whom ſuch profound reverence is paid. There is no diſpute about precedence, every one knows his place very diſtinctly; the name of every office is engraved on copper-plates faſtened into the marble pavement.

People in Europe are not fond of pomp when they go a journey, but on the contrary are very negligent and careleſs about it; but they have a contrary method in China, where a chief Mandarine never travels but with pomp and ſplendor: If he goes by water his own bark is ſuperb, and he has a large train of other barks to carry his attendants: If he travels by land, beſides the domeſtics and ſoldiers which precede and follow him with ſpears and enſigns, he has for his own perſon a litter, a chair carried by mules, or eight men, and ſeveral led horſes; he makes uſe of theſe vehicles one after another, as occaſion and the different weather require. There is commonly in every province a great river, or broad canal, with cauſeways on each ſide caſed with flat ſtones or marble that ſerves for a highway: That which is called the great canal croſſes the whole empire from Canton to Peking, and nothing can be more commodious for the paſſing ſix hundred leagues from the capital to Macao, without travelling by land but one day's journey, in order to croſs the mountain of Mei lin, that ſeparates the province of

Kiang ſi from Quang tong, and even this may be avoided by continuing the journey by water, eſpecially when the waters are high.

For this reaſon the Mandarines go to take poſſeſſion of their government, and the meſſengers ſent from court moſt commonly paſs by water: They are furniſhed with barks at the emperor's expence, which are equal in bigneſs to a third-rate man of war: There are three different ſorts of theſe imperial barks, than which nothing can be more neat, being painted, gilt, and embelliſhed with dragons, and japanned both within and without: Thoſe of the middle ſize are moſt in uſe, which are above ſixteen foot broad, and twenty-four long, and nine in depth from the deck; the form is ſquare and flat, except the fore-part, which is ſomewhat round.

Beſides the cabbin of the maſter of the bark, who has his family, his kitchen, two large rooms, one before and the other behind, there is a hall about ſix or ſeven foot high, and eleven broad, and likewiſe an antichamber, and two or three other rooms, and a by-place without ornaments, all upon the ſame deck, which make up the Mandarine's apartment. It is all japanned with fine red and white japan, there is alſo plenty of carved work, paintings, and gildings upon the cieling, and on the ſides; the tables and chairs are japanned with red and black; the hall has windows on each ſide, which may be taken away when it is convenient: Inſtead of glaſs they make uſe of thin oyſter-ſhells, or fine ſtuffs done over with ſhining wax, and enriched with flowers, trees, and variety of figures: The deck is ſurrounded with galleries, by which the ſailors may paſs and repaſs without incommoding the paſſengers.

This apartment is covered with a ſort of plat-form

or terraſs open on all ſides, ſet apart for muſic, and contains four or five muſicians, who make an harmony which can raviſh none but the ears of a Chineſe. Underneath is the hold divided into ſeveral partitions that contain the baggage; the ſails are made of matts, every ſail is divided into ſeveral oblong ſquares, which being extended from the ſail, when it is folded it takes up little or no room. Theſe ſails are very convenient, becauſe they hold more wind than others, and if a ſtrong wind breaks the braces no inconvenience ariſes from thence to the bark.

To force on the great barks they make uſe of long thick poles in the ſhape of a gibbet, or the letter T, one end of which goes to the bottom of the water, and the other is applied to the upper part of the cheſt, that the ſailor may make a ſtronger thruſt, and force the bark forward with greater ſwiftneſs; or elſe they make uſe of oars of ſeveral ſhapes, commonly a long pole with a broad end, and a hole in the middle to receive the pegs that are fixed on the ſide of the bark: there are others that are never taken out of the water; they manage the extremity of the oar by moving it to the right and left, that it imitates the motion of a fiſh's tail, and is kept in the ſame poſition as the tails of birds of prey, when they fly without ſtirring their wings.

The convenience of this is that their oars take up little or no room in the bark, for they are ranged on the ſide upon planks, and move like a rudder; they ſeldom are broken, and though they are never taken out of the water they conſtantly force the bark forward.

There are barks which are drawn along with ropes when the winds are contrary, or when they are obliged to go againſt the ſtream; theſe ropes are made in

many places of the ſplinters of canes; they cleave the canes into ſmall long ſplinters, and by that means make them into cords, which never grow rotten by the water, but are exceeding ſtrong; in ſome other places they make uſe of cords made of hemp.

The bark that carries the great Mandarine is always followed by ſeveral others, as we have already ſaid, among which there is always one at leaſt that bears the proviſions; it carries the kitchen, the eatables, and the cooks; another is full of ſoldiers, a third, much more ſmall and light, is appointed to go before to give notice that all things neceſſary may be prepared in the paſſage, that there may be no occaſion to wait; theſe barks have their rowers, and in caſe of neceſſity are alſo drawn with a rope along the bank by a certain number of men that are ſupplied by the Mandarines of each city, and are changed every day: The number of theſe men is determined according to the number of horſes appointed by the emperor's patent, viz. Three men for every horſe, inſomuch that if horſes are appointed for an envoy, they will ſupply him with twenty-four men to draw the bark, when the paſſage is by water; there are at the diſtance of every league a ſort of centries placed at proper diſtances, ſo that if there be occaſion they may give mutual notice to each other by ſignals: In the day-time theſe ſignals are made by means of a thick ſmoke, which they cauſe by burning leaves and branches of pine in three ſmall ſtoves of the figure of a pyramid, and open at the top: In the night-time they are made by the report of a ſmall piece of artillery. The ſoldiers at every ſtation, which are ſometimes ten, ſometimes five, or leſs according to the place, ſtand all of a row along the bank out of reſpect to the Mandarine; one of them bears an enſign

diſplayed, the others are in the poſture that the arms they carry require them to be in.

If it be an envoy they put at the head and ſtern of the bark four lanthorns, whereon are written in great characters of gold theſe words, Kin tchai ta gin, that is, The great Envoy from the Court; theſe words are accompanied with ſtreamers and flags of ſilk of ſeveral colours that play in the wind.

Every time they caſt anchor, as they do in the evening, or when they heave it in the morning to paſs forward, the Corps de Garde ſalutes the Mandarine with a diſcharge of their artillery, to which the trumpets reply with ſeveral tantara's: When the night approaches they light the lanthorns at the head and ſtern, as well as thirteen other lanthorns of a ſmaller ſize, which are hung in the form of a ſtring of beads at the ſide of the maſt, viz. ten behind in a perpendicular line, and three above in an horizontal one.

When the lanthorns are lighted the captain of the place ſtands with his company overagainſt the barks, and calls over with a loud voice the men that he has brought to watch, and ſtand centry all night; then the maſter of the bark pronounces a ſet harangue, wherein he makes particular mention of all the accidents that are to be feared, as fire, thieves, &c. and reminds the ſoldiers that if any of theſe things happen they ſhall be reſponſible for them.

The ſoldiers at the end of every article give a great ſhout, after which they withdraw to form a Corps de Garde, and leave one of their company to ſtand centry, who walks backward and forward upon the key, and continually makes a rattling noiſe with two pieces of bamboo, that they may not have the leaſt doubt of his vigilance, and that they may be ſure he is not aſleep: Theſe centries are relieved every hour, and make

the ſame noiſe the whole night, according to their turns: If it is a chief Mandarine, or a great court-lord, they pay him the ſame honours.

The great number of canals that are to be ſeen in China have ſomething very ſingular, they are often lined on each ſide to the length of ten or twelve foot with fine ſquare free-ſtone, and in ſome places with grey marble.

Some of the canals have banks that are twenty or twenty-five foot high on each ſide, inſomuch that there is need of a great number of engines to raiſe the water into the fields: Some are cut above ten leagues in a ſtrait line.

The canal that is on the north-weſt of the city Hang tcheou is extended very far in a right-line, and is every where more than fifteen toiſes in breadth; and is lined on each ſide with free-ſtone, and bordered with houſes as cloſe together as the ſtreet of a city, and as full of people: Both the ſides of the canal are quite covered with barks; in the places where the bank is low and flooded, they have built flat bridges made of great ſtones, placed three and three, each of them being ſeven or eight foot in length in the form of a cauſeway.

The great canals that are in every province diſcharge their waters to the right and left into ſeveral ſmall ones, that afterwards form a great number of rivulets, which are diſperſed in the plains, and reach to the ends of the towns, and often to the great cities; from ſpace to ſpace they are covered with a great number of bridges of three, five, or ſeven arches; that in the middle is ſometimes thirty-ſix, and even forty-five foot wide, and is very high, that barks may paſs through without taking down their maſts; thoſe of each ſide are ſeldom leſs

than thirty, and the reſt diminiſh in proportion towards each end of the bridge.

There are ſome that have but one arch, others have a round vault, others a ſemicircle; theſe vaults are built of arched ſtones five or ſix foot long, and only five or ſix inches thick, and ſome of them are polygons: As theſe arches are not very thick towards the top, they cannot be ſtrong, but then no waggons paſs over them, for the Chineſe make uſe of nothing but porters to carry their bales, who paſs over theſe bridges by the help of ſtairs on each ſide, with ſteps of about three inches thick: There are ſome of theſe bridges that inſtead of arches or vaults have three or four great ſtones placed on piers in the form of planks, ſome of theſe ſtones are ten, twelve, fifteen and eighteen foot in length; there are a great number of theſe handſomely built over the great canal, the piers of which are ſo narrow that the arches ſeem to be ſuſpended in the air. There is no great difficulty to know in what manner the Chineſe workmen build theſe bridges, for after having finiſhed the arches that are next to the land, when the bridge is to have only one principal arch, or raiſed a cauſeway of piers when it is to have ſeveral, they then make choice of ſtones of four or five foot long, and half a foot broad, which they place alternately upright and croſs-ways, in ſuch a manner as to contrive that the key-ſtones ſhall be laid horizontally. The top of the arch is commonly no more than the thickneſs of one of theſe ſtones, and becauſe the bridges, eſpecially when they have but one arch, are ſometimes forty or fifty foot wide between the piers, and conſequently are raiſed very high, and much above the cauſeway, they aſcend on each ſide by ſteps of very eaſy aſcent: There are ſome that it would be difficult for horſes to paſs

over, and the whole work is generally well contrived.

Among the great number of bridges there are ſome of a very handſome ſtructure; that which is two leagues and a half weſtward from Peking, part of which was thrown down by a ſudden inundation, was one of the fineſt that ever was ſeen; it was made intirely of white marble, well worked, and ingeniouſly built; there were ſeventy ſmall pillars placed on each ſide, which pillars were ſeparated by cartouches of fine marble, whereon were curiouſly carved flowers, foliage, birds, and ſeveral ſorts of animals; at the entrance of the bridge on the eaſt-end there were two marble pedeſtals placed on each ſide, on which were two lions of extraordinary magnitude; there were alſo carved in ſtone ſeveral little lions, ſome going up to the great ones, others deſcending from them, and others between their legs; at the other end, towards the weſt, were two other marble pedeſtals, on which ſtood the figures of two children carved with the ſame ingenuity. We ought to place in the rank of public works the monuments which the Chineſe have erected almoſt in every city to perpetuate the memory of their heroes, that is to ſay, the captains, generals of the army, princes, philoſophers, and Mandarines, who have done ſervice to the public, and have ſignalized themſelves by heroic actions.

There is, for inſtance, near the city of Nan hiong, in the province of Quang tong, an high mountain from whence proceed two rivers; heretofore it was inacceſſible, and a Calao born in the province undertook to cut a paſſage through it for the ſake of travellers; to preſerve the memory of ſo ſignal a benefit they erected a monument on the top of the mountain, and placed his ſtatue there, before which they burnt perfumes

with intent to eternize the memory of this great man, who executed ſo difficult an undertaking for the uſe of his countrymen. They reckon more than one thouſand one hundred monuments erected to the honour of their princes, and to men whom ſcience or virtue had rendered illuſtrious: The women have their ſhare in this honour, and they have diſtinguiſhed ſeveral who deſerved and obtained the like titles of honour, and whoſe heroic virtues are conſtantly celebrated in the works of their moſt famous poets.

Theſe monuments conſiſt particularly in triumphal arches, which are very numerous in every city; there are many very inartificially made, and deſerve little notice, but others worthy of our attention; ſome are made entirely of wood, except the pedeſtals, which are of marble.

Thoſe that are at Ning po have generally three gates, a large one in the middle, and two ſmall ones on the ſides; the pillars, conſiſting of one ſtone, make the door-poſts; the entablature is compoſed of three or four faces generally without projection, and without any moulding, except the laſt or the laſt but one, which is in the room of a frize, and on which they engrave an inſcription.

Inſtead of a cornice there is a roof that ſerves to compleat the gate, and which is ſupported by the door-poſts; there is nothing but a drawing that can juſtly repreſent this kind of roof, even our Gothic architecture has not any thing ſo odd; every gate is made in the ſame manner, only every part proportionably leſs: All theſe pieces, though of ſtone, are joined together by tenons and mortiſes, as if they were made of wood.

The rails or breaſtwork of the bridges, that are in great numbers on the canals, are made in the ſame

taſte; they are great ſquare flat pieces of ſtone made to ſlide in grooves, which are cut in the poſts for that purpoſe.

Upon theſe triumphal arches, which are ſeldom above twenty or twenty-five foot high, one may ſee the figures of men, groteſque figures, flowers, birds jutting out, and other ornaments indifferently well carved; they jut out ſo much as to be almoſt ſeparated from the work.

In ſpeaking of the walls and the gates of Peking, I have already given a notion of the Chineſe magnificence and public works; I ſhall only add, that the walls of the cities are erected ſo high that they hide the proſpect of the buildings, and are ſo broad that one may ride on horſeback upon them: The walls of Peking are made of brick, and are forty foot high; they are flanked at each diſtance of twenty toiſes with ſmall ſquare towers kept in good repair; there are great ſtair-caſes in ſome places for the cavalry to ride up upon.

As for the gates, though they are not adorned with figures in Baſſo Relievo like other public works, they ſurprize very much by the prodigious height of the two pavilions that form them, by their vaults or arches that in ſome places are of marble, by their thickneſs, and by the ſtrength of the work.

The towers erected in almoſt every city are not the leaſt ornaments belonging to them; they conſiſt of ſeveral ſtories, and the higher they are the leſs is the circumference; there are windows on all ſides of every ſtory: That in the city of Nanking, in the province of Kiang nan, is the moſt famous, and is generally called The Great Tower, or the Tower of Porcelane; I have already ſpoken of it in the beginning of this work, but as F. le Compte has given a more exact de-

ſcription of it, it deſerves to be mentioned in this place.

"There is, ſays the father, without the city, and "not within it, as ſome have ſaid, a temple called by "the Chineſe The Temple of Gratitude, built by the "emperor Yong lo; it is erected on a pile of bricks, "ſurrounded with rails of unpoliſhed marble, you go "up to it by a ſtair-caſe of ten or twelve ſteps; the "hall, which ſerves for the temple, is a hundred foot "high, and is ſupported by a ſmall marble baſis of a "foot in height, which juts out two foot from the reſt "of the wall all round; the front is adorned with a "gallery and ſeveral pillars; the roofs, for according "to the cuſtom of China there are often two, one that "joins to the wall, and the other that covers the "whole; the roofs, I ſay, are of green ſhining japan-"ned tiles; the joiner's work on the inſide is paint-"ed, and adorned with a great number of pieces in-"differently united one to another, which the Chi-"neſe think no mean ornament; it is true that this "foreſt of beams, joiſts, rafters, and ſpars, that is ſeen "in every part, has ſomething very ſingular and ſur-"priſing, becauſe one conceives that there is in theſe "ſorts of works a great deal of labour and expence, "though in reality this confuſion proceeds from the "ignorance of the workmen, who have not diſcovered "that beautiful ſimplicity which is to be ſeen in Eu-"ropean buildings.

"The hall receives no light but through the doors; "on the eaſt-ſide there are three very large ones, "through which one enters the famous tower I am "ſpeaking of, and which makes part of the temple: "This tower is of an octogon figure, about forty "foot wide, ſo that every ſide is about fifteen foot; "it is encompaſſed on the outſide by a wall of the

" ſame figure, two toiſes and a half diſtant from the " edifice, and ſupports at a moderate height a roof " covered with japanned tiles, that ſeems to proceed " from the body of the tower, which forms under it " a very handſome gallery: The tower has nine ſto- " ries, every one of which is adorned with a cornice " three foot from the windows, and ſurrounded with " the ſame ſort of roof as the gallery, except that it " does not jut out ſo far, becauſe it is not ſupported " with a ſecond wall; they become ſtill ſmaller as the " tower riſes higher, and has leſs circumference.

" The wall on the ground-floor is at leaſt twelve " foot thick and eight and a half high: it is caſed " with China-wate, but the rain and the duſt have di- " miniſhed its beauty, though it ſtill looks handſome " enough to ſhew the nature of the porcelane, though " coarſely made, for it is not to be ſuppoſed that bricks " would have preſerved their beauty three hundred " years as this has done.

" The ſtair-caſe which is in the inſide is ſmall and " inconvenient, becauſe the ſteps are extremely high; " every ſtory is ſeparated by thick beams placed croſs- " ways, which ſupport a floor, and form a room the " cieling of which is adorned with variety of paint- " ings; the walls of all the higher ſtories are full of " ſmall niches with idols in Baſſo Relievo; the whole " work is gilded, and ſeems to be marble or poliſhed " ſtone, but I believe it to be nothing in reality, but " a kind of a brick made in a mould, for the Chineſe " are very ingenious in ſtamping all ſorts of ornaments " on their bricks, which are made of earth extremely " fine and well tempered, and much more capable " than ours of taking the impreſſion of the mould.

" The firſt ſtory is the higheſt, but the reſt are all " of the ſame height; I reckoned ninety ſteps of a-

"bout ten inches each, which I meaſured exactly, "and which makes an hundred and fifty eight foot; "if to this be added the height of the pile, and the "ninth ſtory which has no ſteps, and the roof, it will "be found that the tower is from the ground above "two hundred foot.

"The top of all the work is not one of the leaſt "beauties of the tower; it is a thick pole that ſtands "upon the floor of the eighth ſtory, and reaches more "than thirty foot above the roof; it ſeems to be wrapt "in a large iron hoop of the ſame height, in the fa-"ſhion of a ſpiral line or ſcrew, ſeveral foot diſtant "from the pole, ſo that it looks like a ſort of an emp-"ty cone hanging in the air, with ſpaces to let in "light; on the top of it is placed a golden ball of an "extraordinary magnitude." This is called by the Chineſe The Porcelane Tower, though ſome Europeans have called it The Brick Tower; but let that be as it will, it is certainly the moſt ſolid, remarkable and magnificent work in the eaſt.

In taking notice of the public buildings, wherein the Chineſe have cauſed their profuſion to appear, their temples or pagods ought not to be omitted, of which there is a prodigious number in China, and the moſt celebrated are built in the mountains; however dry theſe mountains appear, the Chineſe induſtry has made amends with embelliſhments for the conveniences refuſed by nature; the canals, cut at great expence, conduct the water from the mountains into baſons and reſervoirs appointed for that purpoſe; the gardens, groves, and grottos, contrived in the rocks for a ſhelter againſt the exceſſive heat of a burning climate, render theſe ſolitudes moſt agreeably charming.

The buildings conſiſt of porticoes paved with large ſquare poliſhed ſtones, in halls and pavilions that ſtand

in the corners of courts, and communicate by long galleries adorned with ſtatues of ſtone, and ſometimes of braſs; the roofs of theſe buildings ſhine on account of the beauty of the tiles japanned with green and yellow, and enriched at the extremities with dragons jutting out of the ſame colour.

There are few of theſe pagods that have not a great tower, which ſtands by itſelf terminating in a dome, and perſons go to the top by a ſtair-caſe that winds round about it; in the middle of the dome is commonly a temple of a ſquare figure, the vault is often adorned with Moſaick work, and the walls with ſtone figures in Relievo, which repreſent various animals and monſters.

Such is the form of the greateſt part of the pagods, which are more or leſs large according to the devotion and riches of thoſe who have contributed to build them: Theſe are the abodes of the bonzes and idol-prieſts, who make uſe of a thouſand arts to impoſe upon the credulity of mankind, who come from a great diſtance in pilgrimage to theſe temples conſecrated to the devil; but as the Chineſe are not very conſiſtent in the worſhip they pay to their idols, it often happens that they have little veneration either for their gods or their miniſters.

Of the RIVERS, LAKES, *and* VOLCANOES *in* CHINA.

THE rivers of China are no leſs conſiderable than its canals, there are two eſpecially, which the relations have made famous. The firſt is called Kiam or Yamçe, which they commonly tranſlate The Son of the Sea: But I am afraid they are miſtaken; for the letter the Chineſe uſe to write Yam is different from that which ſignifies the ſea, although the ſound and pronunciation may have ſome affinity: Amongſt ſeveral ſignifications that this letter may have, that which they gave it in former times makes for our purpoſe. Under the reign of the emperor Yon it ſignified a province of China, limited by this river on the north; and it is ſomewhat probable that they gave this ſame name to the river, becauſe that prince drained all the water that overflowed the whole country.

This river takes its riſe in the province of Yunnan, croſſes the provinces of Soutchouen, Houquam, and Nanking; and after it hath watered four kingdoms far and wide for four hundred leagues together, it diſembogues into the eaſt-ſea over againſt the iſle of Tçoummim, caſt up at its mouth by the ſands which it carries along it; The Chineſe have a proverb amongſt them that ſays, The ſea hath no bounds, and Kiam hath no bottom. And in truth in ſome places there is none to be found; in others they pretend there is two or three hundred fathom water. I am nevertheleſs perſuaded that their pilots, that carry not above fifty or ſixty fathom cord at longeſt, never had the curioſity to ſound ſo deep as three hundred fathom; and

the impoſſibility of finding the bottom with their ordinary plummet, is ſufficient, in my opinion, to incline them to ſuch hyperboles.

I have many times ſailed upon this river; I have moreover taken a diligent account of its courſe and breadth from Nanking, to the mouth of another river, into which men enter to purſue the way to Canton. It is off of Nanking thirty leagues from the ſea, a little half league broad; the paſſage along it is become dangerous; and becomes more and more infamous every day for its ſhipwrecks. In its courſe, which is exceeding rapid, it forms a great number of iſles, all of them very beneficial to the province, by reaſon of that multitude of bull-ruſhes ten or twelve foot high that it produceth, ſerving for fuel to all the cities thereabout; for they have ſcarce wood enough for buildings and ſhips. They yield a great revenue, and the emperor draws conſiderable duties from them.

The river which the torrents of the mountains do ſometimes ſwell extraordinarily, grow ſo rapid, that many times they bear away the iſles with them, or leſſen them by the half; and for the ſame reaſon form other new ones in ſome other place; and one cannot but admire to ſee them change place in ſuch a ſhort time, juſt as if by diving, they had paſt under water from one place to another; that does not always come to paſs: But there is obſerved ſuch conſiderable change every year, that the Mandarines, leſt they ſhould be miſtaken, get them to be meaſured every three years, to augment, or diminiſh the impoſts and duties, according to the condition they are found in.

The ſecond river of China is called Hoamho, as much as to ſay, The yellow River, becauſe the earth it ſweeps away with it, eſpecially in times of great rains, give it that colour. I have ſeen a great many

others, whoſe waters at certain ſeaſons of the year, are ſo overcharged with ſlime, and ſo groſs and thick, that they rather reſemble torrents of mud, than real rivers. The Hoamho takes its ſource at the extremity of the mountains that bound the province of Soutchouen in the weſt: From thence it throws itſelf into Tartary, where it flows for ſome time all along the great wall, at which it re-enters China between the province of Chanſi and Chenſi. After that it waters the province of Honan; and when it hath run croſs one part of the province of Nanking, and flowed above ſix hundred leagues into the land, it diſembogues at length into the eaſt ſea, not far from the mouth of Kiam. I have croſt it, and coaſted it in divers places; it is every where very broad and rapid, yet neither deep nor navigable, to ſpeak of.

This river hath in former times cauſed great deſolation in China, and they are ſtill forced at this very day to keep up the waters in certain places by long and ſtrong banks, which notwithſtanding does not exempt the cities thereabouts from apprehenſions of inundation. So likewiſe have they been careful, in the province of Honan, the ground lying very low thereabout, to ſurround the greateſt part of the cities, about a mile from the walls, with a terrace, caſed with turf, to prevent being ſurpriſed by accidents and caſualties in caſe the bank be broken, as happened about fifty-two years ago. For the emperor, endeavouring to force a rebel (who, for a long time laid cloſe ſiege to the city of Honan) to draw off, cauſed one part of the banks to be broken down, thereby to drown the adverſe army. But the relief he afforded the city proved more fatal than the fury of the beſiegers would have been; the whole province almoſt was laid under water, together with many cities and abundance of

villages, above three hundred thouſand perſons drowned in the metropolis, amongſt whom were ſome of the miſſionaries, who at that time had a numerous flock of Chriſtians; there they and their church loſt their lives.

The low country ever ſince is become a kind of a marſh or lake; not but that they have ſome deſign to repair this loſs, but the undertaking is difficult and very expenſive. The ſovereign court that takes care of public works, importuned the emperor more than once to ſend father Verbieſt thither, and probably that prince would have conſented thereto at laſt, but he diſcovered that the Mandarines made uſe of this pretence, to remove the father a diſtance from the court, and that their deſign was to engage him in a difficult enterpriſe, that was enough to deſtroy him; or out of which he could never have diſentangled himſelf with any honour.

There is to be ſeen in China abundance of other rivers leſs famous, but yet more commodious for commerce and trade.

As to what concerns fountains it were to be wiſhed there were more of them, and better. It is certain that their uſual waters are not good, which, perhaps, hath obliged the inhabitants, eſpecially in the ſouthern provinces, to drink it always warm.

We are aſſured that there are to be found in China amongſt fountains, ſeveral that ſuffer flux and reflux as regularly as the ſea doth, whether it be that they have ſome communication with the ocean by certain ſubterraneous conveyances, and conduits, or whether it be in paſſing through certain earths, they are impregnated with ſalts and ſpirits apt to cauſe this fermentation, I leave others to determine.

Since I have begun to ſpeak of the different waters

of China, I cannot paſs over in ſilence the lakes and ponds that are every where almoſt to be ſeen in all the provinces. Thoſe that are produced in winter by the torrents from the mountains, lay waſte the fields, and render the whole country during ſummer, barren, ſandy, and full of flints. Thoſe that ariſe from ſprings are abounding in fiſh, and yield a conſiderable revenue to the emperor by the ſalt they afford. There is one of them amongſt the reſt, if I be not miſtaken, it is in Chan ſi, in the middle whereof appears a ſmall iſland, where people divert themſelves, during the exceſſive heat, to ſprinkle water all over. There is made in a little while, a cruſt of a certain ſalt very white, and of a pleaſant ſcent, which they continue all the ſummer long, with that ſucceſs, that the ſalt would be ſufficient for the whole province, if it were as ſalt as that of the ſea; they commonly make uſe of it to ſeaſon meat withal.

Although I have not ſeen all theſe famous lakes in China, whereunto hiſtorians aſcribe ſo many miracles, yet ſhall I relate ſomething, which I do not care to warrant for goſpel; which, nevertheleſs, will let you underſtand the genius of the country, where people ſo eaſily give credit to what is moſt incredible.

In the province of Fokien there is one whoſe water is green, and changes iron into copper. They have built a palace upon the banks of another not far diſtant from the former, in an apartment of which one hears the ringing of bells every time heaven threatens a ſtorm. There are waters in the province of Canton that change colour every year, in ſummer and in winter, they are very clear; in autumn they turn blue, and of ſuch a fine blue that people make uſe of it to dye ſtuffs.

In that place is to be ſeen a mountain full of caverns,

whoſe very aſpect is very terrible, in which is found a lake of that nature, that if one throw a ſtone into it, one may hear a noiſe like thunder; ſome time after there ariſeth a groſs miſt, which immediately diſſolves into water.

But the moſt famous of them all, is, that of the province of Jannan. The Chineſe would make you believe that this lake came all on the ſudden, during an earthquake that ſwallowed up all the country with its inhabitants: This was a juſt judgment upon them for their wickedneſs, for they were very diſſolute livers. Of all that were there at that time, there was but one child that was ſaved, which they found in the middle of the lake born up upon a piece of wood.

In the iſle of Hainan, belonging to China, there is a ſort of water, whether it be a lake or fountain, I know not, that petrifies fiſh. I myſelf have brought over crawfiſh, that preſerving their intire natural figure, are ſo far changed into ſtone, that the claws and body of them are very hard, very ſolid, and little differing from ſtone.

The lake Tong ting hou is the largeſt in the empire, which is an extraordinary thing, for in almoſt every province there is a lake of prodigious extent. This in particular is formed by the confluence of four large rivers, which come from the province of Kiang ſi; it is thirty leagues in circumference.

There are ſeveral volcanoes or burning mountains in China, the moſt remarkable whereof is that called Linoſing, which is of a great height, and vomits fire, cinders, aſhes, and ſometimes torrents of ſulphur and other minerals.

Of the FOSSILS, BEASTS, BIRDS, *and* FISHES, *in* CHINA.

THE mountains of China abound with variety of metals and minerals, and amongſt the reſt they have gold and ſilver, but their gold mines are not ſuffered to be opened, and yet they have plenty of that commodity, by reaſon of the great quantities of it waſhed down by torrents from the mountains in the rainy ſeaſons, and caught by fleeces and other ſtrainers laid acroſs the water, or found among the ſand and mud of their rivers. Multitudes of people live wholly by this buſineſs of gathering gold, which is ſaid to be ſo pure as to need no refining. It is probable they prohibit the working of their gold mines, that they may have a reſerve of that metal in caſe of need, having at preſent more than enough for their own uſe, and a conſtant ſupply brought into their country from Europe and other parts. They have alſo mines of copper, iron, quick-ſilver, and ſome lead: but this laſt metal is very ſcarce, as appears by our Engliſh lead finding ſo quick a market in China. Beſides theſe metals they have ſeveral compound ones, the manner of mixing which they keep as a great ſecret; particularly that called tonbaga or donbaga, which is of the colour of very pale braſs, or a dull kind of tin, and to which they aſcribe ſeveral extraordinary virtues, as thoſe of expelling poiſon, ſtopping hæmorrhages, and the like, merely by wearing it in the form of a ring or necklace.

In ſeveral parts of the province of Honan in China, there is found a ſort of ſalt-earth, which being boiled and cryſtallized makes a very good white ſalt; and in

ſome places the ground, after rain, ſpews up a kind of froth, which is made into an excellent ſoap. The province of Quangſi is famed for a yellow earth, which taken inwardly expels poiſon, and by outward application cures the bite of venomous creatures. There is alſo a ſort of earth of a fine red like vermilion, and another of a fine white, which are uſed as coſmetics by the ladies. The ſame province furniſhes in great abundance that valuable earth or clay of which they make their porcelane or China-ware, ſo much eſteemed and uſed amongſt us, being the moſt beautiful earthen manufacture of any in the world, though it has of late been well imitated in Europe. This earth is of two kinds, the one called kaulin, which is full of glittering corpuſcles; the other called petunſe, which is of a plain white, exceeding fine and ſoft to the touch. Both thoſe earths, or rather ſtones, are found in quarries twenty or thirty leagues from Kingteching, to which place they are brought down the river by a vaſt number of little barks continually employed in that ſervice. The petunſe is cut out of the mine in form of bricks, and is much harder than the kaulin, which laſt notwithſtanding is what gives the ſtrength and firmneſs to the porcelane. The mines of the kaulin are deep, wherein it lies in glebes or clods; and the mountains whence it is dug are covered with a reddiſh earth.

The Chineſe have a ſtone called Hiang hoang, which they imagine to be an antidote againſt every kind of poiſon; in ſome places there are large quarries of it. It is of a ſoft ſubſtance, and cups, and ſuch like things are eaſily made of it. It is naturally of a yellowiſh colour, and ſometimes ſpotted with black.

Lapis Lazuli is found in ſeveral places near Yun

nan, and is not very dear, it differing in nothing from that which is imported into Europe.

Yu che, of the fineſt ſort, is generated in the diſtrict of Tai tong fou, of the province of Chanſi: It is a ſpecies of jaſper, of the colour of the white part of agate. It appears tranſparent, and ſometimes ſpotted when it is poliſhed.

The rubies which are ſold at Yun nan fou, are of the right kind, but very little. There are alſo other precious ſtones to be had there; but they are to be imported from other countries, and eſpecially from the kingdom of Aca.

In the province of Fo kien the fineſt rock-chryſtal is to be found. The artificers who live near the mountains where it is got, are very ſkilful in working it; and they make ſeals, buttons, figures of animals, &c. of it.

Quarries of fine marble, which would equal the beſt in Europe, if it were well poliſhed, are to be ſeen in this province; but they make not much uſe of it in their public buildings.

There are in China a prodigious number of all kinds of wild beaſts, ſuch as tygers, boars, buffaloes, rhinoceroſes, camels, &c. but no lions; but as theſe beaſts are univerſally known, I ſhall only take notice of thoſe peculiar to this country.

There is a ſpecies of camel no higher than an ordinary horſe; theſe have two bunches upon their back covered with long hair, which form a kind of a ſaddle; the bunch before ſeems to be formed by the back-bone and the upper-part of the ſhoulder-bone, and is not unlike the bunch which the Indian cows have on their ſhoulders; the other bunch is placed juſt before the buttocks. This animal has not ſuch long legs in proportion as the common camels; they have alſo a ſhor-

ter and thicker neck, covered with thick hair as long as that of goats; ſome of them are a yellowiſh dun colour, others are a little upon the red, and of an aſh-colour in ſome places; the legs are not ſlender as thoſe of the common camels, inſomuch that this kind of camel or dromedary ſeems for its largeneſs more fit to carry burdens.

There is an animal ſomewhat reſembling a roe-buck, which the Chineſe call Kiang tchang tſe, that is, the muſk roe-buck: theſe deer are found in the mountains near the city of Peking. They have no horns, and their hair is of a blackiſh colour. The muſk bag is compoſed of a very thin ſkin, covered with extremely fine hair. The fleſh is good to eat, and is frequently ſerved up at the beſt tables. The muſk is generated in the inward part of the bag, and ſticks all round it like a kind of ſalt. There are two ſorts, but that which is in grains is the moſt valuable, the other is the leaſt eſteemed, becauſe it is too ſmall: the female produces no muſk, or if ſhe does it has not the leaſt ſcent.

It is ſaid that this animal feeds on the fleſh of ſerpents, and that the roe-buck eaſily kills them, becauſe when they are at a certain diſtance from the roe-buck they are overcome with the ſcent of the muſk, and grow ſo weak that they are not able to ſtir.

When the country people go to cut wood or make charcoal in the mountains, they have no better ſecret to guard them againſt ſerpents, whoſe bite is very dangerous, that to carry about them a few grains of muſk: then they ſleep peaceably after they have dined, and if any ſerpent comes near them, it is ſuddenly ſtupified by the ſmell of the muſk, and is able to get no farther.

There are all kinds of parrots in the ſouthern provinces, exactly reſembling thoſe brought from Ameri-

ca. They have the ſame plumage, and the ſame aptneſs for talking: but they are not to be compared to the bird called Kniki, that is, the Golden Hen. There is no ſuch ſpecies to be found in Europe. The livelineſs of the yellow and red, the plume on the head, the delicate ſhadowing of the tail, the variety of colours in the wings, together with a well-ſhaped body, have doubtleſs given occaſion for the epithet of Golden conferred on this fowl, to ſhew its preference over the moſt valuable of the winged race. The fleſh of it is alſo more delicate than that of a pheaſant, ſo that, on every account, not one of the eaſtern birds can be more deſirable than this in Europe.

The Hai tſing may alſo be reckoned among the beautiful birds. It is very uncommon, and is to be found only in the diſtrict of Han tchong fou, in the province of Chenſi, and in ſome parts of Tartary. It is as beautiful as our fineſt falcons, and is far ſuperior in ſize and ſtrength; ſo that it may be called the king of the birds of prey in China and Tartary.

Beſides the domeſtick birds, they have on the rivers and lakes great plenty of water-fowl, and eſpecially wild-ducks: the manner of taking which has been already deſcribed in p. 110 of this volume.

The butterflies of the mountain Lo feou chan are alſo greatly admired. It is ſituated in the diſtrict of Hoei tcheou fou, of the province of Quantong. The moſt curious and largeſt among them are ſent to court, where they are made uſe of for a particular kind of ornament. Their colours are very lively, and beautifully diverſified. Theſe butterflies are larger than the European ones. They lie motionleſs on the trees in the day-time, and conſequently are eaſily taken; but in the night they flutter about much like our bats, and ſeveral of them appear to be very near as large. There

are others of a leſs kind, much ſought after, but not half ſo beautiful as theſe.

There are no ſpecies of fiſh in Europe but what are to be found in China; they have ſturgeons, carp, ſoals, lampreys, ſhad, trouts, ſalmon, &c. and alſo ſeveral others of a delicious taſte, which are quite unknown in Europe. The moſt remarkable are the following.

Tcho kia yu, or the armour-fiſh, is greatly eſteemed by them, and weighs near forty pound; the reaſon of its being called ſo is, becauſe it is covered with very ſharp ſcales, placed in right lines one over another, like tiles on the roof of a houſe; it is very white within, and greatly reſembles veal in taſte.

They catch another delicate fiſh in calm weather, which the natives call the meal-fiſh, on account of its extraordinary whiteneſs, and becauſe the black pupils of its eyes are ſurrounded with two circles reſembling bright ſilver: they are to be found in the ſea near the province of Cang nan, and in ſuch prodigious ſhoals that with one draught of the net they commonly catch four hundred weight of them.

One of the beſt fiſhes in China is that which is caught in the fourth and fifth moon; it reſembles a ſea-bream, and weighs five or ſix pound; it may frequently be bought for little more than a farthing a pound, and for as much more twenty leagues up the country where it is carried.

When this ſort of fiſhing is ended, there come from the coaſts of Tche kiang large barks, loaded with another kind of freſh fiſh like a cod; it can hardly be imagined how much there is conſumed of them in the proper ſeaſon from the coaſts of Fo kien to Chang tong, beſides the immenſe quantity which are ſalted in the country where they catch them.

They may be bought very cheap, though the mer-

chants are at a great expence in tranſporting them, for they muſt get leave of the Mandarine to trade, then they muſt hire a bark, buy the fiſh as ſoon as they are caught, and place them in the hold on layers of ſalt, in the ſame manner as they pack up herrings at Dieppe; by this means, notwithſtanding the extraordinary heats, the fiſh is tranſported into the moſt diſtant provinces. One may eaſily imagine how plentiful this fiſhery muſt be, ſince they are ſold ſo cheap, notwithſtanding the charge that the merchant is at. There is alſo an amazing quantity of other ſalt-fiſh brought from the ſea-coaſt: In the province of Kiang nan one meets with very large fiſh, brought from the ſea, or the Yellow River, which throw themſelves upon large meadows quite under water, but managed with ſo ingenious a coutrivance that the water runs off as ſoon as they are entered, ſo that the fiſh being left on dry land, are eaſily taken; then they ſalt them, and ſell them to the merchants, who load their veſſels at a cheap rate.

In the great river Yang tſe kiang, oppoſite to the city Kieou kong, where it is about a league and a half broad, they catch every kind of excellent fiſh, and among the reſt one which they call Hoang yu or the Yellow fiſh: it is very large, and of an exquiſite taſte, and ſome of them weigh eight hundred pound; they eat as firm as any fiſh, and are not caught but at certain ſeaſons, that is when they come from the lake Tong ting hou into this river.

The Hai ſeng is hideous and ugly, and is commonly ſeen floating near the ſhore in the ſea of Chang tong and Fokien. It looks like a ſhapeleſs lump of ſome inanimate matter, and cannot be eaſily deſcribed; the natives affirm it has four eyes and feet. It has neither bones nor prickles, and dies as ſoon as it is preſſed. It may be preſerved by a little ſalt, and by that means

conveyed over the whole empire. It is much uſed, and reckoned very delicious eating, but a European palate would not like it.

There is a kind of ſea-crab which are very ſubject to petrefaction without loſing their natural ſhape.

The Gold-Fiſh are generally between three and four inches in length, and proportionably thick; the male is of a beautiful red from the head half way down the body, and the remaining part ſeems to be gilded, but in ſuch a manner that our beſt performances of that ſort are much inferior to it. The female is white, and has the tail and ſome part of the body perfectly like ſilver; the tail of each is not ſmooth and flat, like that of other fiſh, but makes a kind of a tuft thick as well as long, and adds new beauty to this little creature, whoſe body is otherwiſe well proportioned.

They ought to be very careful who feed them, as they are extremely delicate, and ſenſible of the leaſt injury from the weather; they are put in a deep large baſon, at the bottom of which they frequently put an earthen pan turned upſide down, with holes in it, that in the heat of the day they may have a ſhelter from the ſun; they alſo throw upon the ſurface of the water a certain kind of herb, which keeps it always green and cool; they change this water twice or thrice a week, but in ſuch a manner that the freſh enters in while the old is going out. If they are obliged to tranſport the fiſh from one veſſel to another, they are very careful that they do not touch them with their hand, for thoſe which are touched ſoon die, or are in a languiſhing condition, therefore they make uſe of a ſmall net, faſtened to a round piece of wood, hollowed in the middle like a circle, with which they gently lift them up, and the threads are ſo cloſe together that it does not let the water quite out before they

are put into freſh. They are very much hurt, and ſometimes killed, by a great noiſe, like that of guns or thunder, or a violent motion, or ſtrong ſmell; for I have remarked upon the ſea, when we have had ſome of them with us, that this was the caſe whenever a gun was fired: beſides, they live upon almoſt nothing; the imperceptible worms that are bred in the water, or other ſuch-like things, are ſufficient to ſupport them; notwithſtanding which they frequently caſt little pieces of paſte into the baſons, but there is nothing better than wafers, which, being ſoaked, make a kind of ſoop, of which they are vaſtly fond, and which undoubtedly is very proper for them.

They multiply greatly in warm climates, provided they are careful to take away the ſpawn that ſwims upon the ſurface of the water, which they would otherwiſe entirely devour; they place the ſpawn in a particular veſſel expoſed to the ſun, and keep it there till the heat hatches the young fry; they are at firſt quite black, but change by little and little to red or white, with gold or ſilver, according to the different kind; the gold and ſilver begin to appear at the end of the tail, and extend by degrees towards the middle of their bodies, according to their particular diſpoſition.

The following obſervations have been made by a curious traveller, who was intimately acquainted with ſome of the Chineſe who get their livelihood by breeding theſe fiſh.

Some of them grow to be as long and as thick as herrings, though the generality of them are no longer than one's longeſt finger.

The male and female are not diſtinguiſhed by the red or white colour: the females have ſmall white ſpots about their gills, and little fins that are near them; and theſe places in the males are bright and ſhining.

Though the generality of them have the tail in the ſhape of a tuft, yet there are ſeveral which have them the ſame as thoſe of other fiſh.

Beſides the little balls of paſte which they are fed with, they give them the yolk of a boiled egg, lean pork dried in the ſun, and reduced to very fine powder; ſometimes they put ſnails into the veſſel where they are kept, becauſe their ſlime ſticks to the ſides of the veſſel, and is an excellent ragout for theſe little creatures. They are likewiſe very fond of ſmall red worms found in the water of ſome reſervoirs.

They do not often multiply when they are ſhut up in theſe veſſels, becauſe their limits are ſo ſmall: for if you would have them bred you muſt put them in reſervoirs, where the water is freſh and deep in ſome places.

You muſt let the water ſettle four or five hours which you draw out of the well to fill the veſſel where the fiſh are put, elſe it would be too raw and unwholſome.

About the beginning of May, when you perceive the fiſh ſpawning, you ſhould ſcatter graſs upon the ſurface of the water, that the ſpawn may adhere thereto, and when you perceive that the ſpawning is over, that is when the males forſake the females, the fiſh muſt be taken out of the veſſel and put into another, that the veſſel that has the ſpawn may be expoſed in the ſun for three or four days, and the water muſt be changed in about forty or fifty, becauſe the ſmall fry may then plainly be ſeen.

The State of PHYSICK *in* CHINA.

THE Chineſe have ſeveral antient authors who treat of the art of medicine, and ſince the empire was eſtabliſhed they have conſtantly applied themſelves to it.

They are but little ſkilled in natural philoſophy, and are entirely ignorant of anatomy; they were never ſenſible of the uſes of the parts of the human body, nor conſequently the cauſes of diſtempers, all their knowledge depending upon a doubtful ſyſtem of the ſtructure of the human frame; we ought not therefore to be ſurpriſed that they have not ma ie the progreſs in this ſcience that our European phyſicians have.

This nation has always greatly eſteemed the ſtudy of phyſick, not only becauſe it is uſeful for the preſervation of life, and the recovery of health, but becauſe they imagine there is a cloſe connexion between the celeſtial motions and it. Formerly there were imperial academies for the improvement of medicine, but the phyſicians who are now moſt eſteemed, are thoſe who have got their knowledge from their forefathers in the ſame line.

Two natural principles of life are laid down by the Chineſe, viz. vital heat and radical moiſture, of which the ſpirits and the blood are the vehicles. They call the vital heat Yang, and the radical moiſture Yn; and as theſe two names joined make what we call man, which has the name of Gin in their language, it is likewiſe of the ſtrokes or figures of theſe two words, joined together, that they form the character or figure of the name of man; and they ſay, in a ſymbolical

manner, that as the diviſion and ſeparation of theſe ſtrokes divide the figure or name of man, ſo the diviſion of theſe two principles alſo kills man.

The Chineſe think that the two principles of life are lodged in every principal part of the body, in all the members and inteſtines, to convey life and ſtrength.

They make three diviſions of the body, one is into the right and left parts; each of theſe parts have an eye, an arm, hand, ſhoulder, leg, and foot: the ſecond diviſion is into three parts, as the thigh, the middle, and the loweſt part; the high includes the head and the parts as far as the breaſt; the middle reaches from the breaſt to the navel; and the laſt from the navel to the ſoles of the feet.

They likewiſe add a third diſtinction to theſe two, which divides the body into inteſtines and members.

The ſix principal members, wherein the radical moiſture is lodged, are three on the left ſide, viz. the heart, ſpleen, and one of the kidneys; three on the right, the lungs, the liver, and the other kidney, which is by them called the Gate of Life.

The inteſtines or entrails, in which they place the vital heat, are alſo ſix in number; three on the right, the great guts, the ſtomach, and the third part of the body; three on the left, the ſmall guts, the ureters, and the gall-bladder.

They alſo believe that there are certain mutual relations between the inteſtines and the members: Thus they pretend that on the right ſide the great guts have reference with the lungs, the ſtomach with the liver, and the third part of the body with the gate of life, or the right kidney; on the left ſide, the ſmall guts to the heart, the gall-bladder to the ſpleen, and the ureters to the kidneys.

Such, in their opinion, are the parts of the body

which are the natural ſeats of vital heat and radical moiſture; and it is from theſe places that they paſs into other parts of the body by means of the ſpirits and blood, the circulation of which it appears they have known ever ſince about four hundred years after the univerſal flood.

They alſo imagine that the body is, by reaſon of the nerves, muſcles, veins, and arteries, a kind of lute or muſical inſtrument, whoſe parts render different ſounds, or rather of a certain kind of temperament proper to themſelves by reaſon of their figure, ſituation, and various uſes; and it is by theſe means that the different pulſes, which are like the various ſounds, and diverſe touches of theſe inſtruments, are marks whereby to judge infallibly of their diſpoſition; in the ſame manner that a ſtring more or leſs ſtretched, touched in one part or in another, in a manner more ſtrong, or more gentle, gives different ſounds, and ſhews if it is too tight or too ſlack.

Theſe twelve ſources of life in the body of man being eſtabliſhed, they have next ſearched after outward tokens in the body, that may diſcover the inward diſpoſition of theſe twelve parts, and they really believe they have found them in the head, which is the ſeat of all the ſenſes that perform the animal operation; and they ſuppoſing neceſſary relations between theſe ſenſes, and the ſources of life, ſay that there is an agreement between the tongue and the heart, the noſtrils and the lungs, the mouth and the ſpleen, the ears and the kidneys, as alſo the eyes and the liver; and they imagine that from the colour of the face, eyes, noſtrils, and ears, from the ſound of the voice, and the diſpoſition of the tongue, they can make certain conjectures of the temperature of the body concerning the death or recovery of a ſick perſon.

Having ſhewn that they make the heart, the liver, the ſpleen, the lungs, and the kidneys, the ſeat of radical moiſture, and the ſix inteſtines, the ſeat of the vital heat; I muſt now explain the manner in which they think this radical moiſture and this vital heat are communicated to other parts of the body: They pretend there are twelve ways, or twelve canals by which they are conveyed.

There is a canal, ſay they, by which the radical moiſture paſſes from the heart to the hands, and they call it Chao chun yn king: It is by ſuch-like paſſages that the viſcera, which are united to the heart, convey the vital heat, and theſe canals are called Cheu tai yang king: Theſe two organs joined make one of the ſources of life.

The ſpleen ſends the radical moiſture to the feet, and the canal which it paſſes is called So kiue yn king; and it is the gall-bladder that conveys the vital heat to it by a paſſage called So chiao yang king.

The kidneys alſo ſend the radical moiſture through another paſſage, as alſo the ureters the vital heat: Theſe canals preſerve the communication of life with the left ſide of the body.

The lungs convey the radical moiſture on the right ſide by a canal called Cheu tai yn king, and the great guts the vital heat by the paſſage Cheng yang ming king. The radical moiſture goes from the liver to the feet, and the vital heat from the ſtomach, the one by So yang ming king, and the other by So tai yn king.

The radical moiſture goes from the gate of life to the hands, by Cheu kiue yn king; and the vital heat of the third part of the body to the feet, by Cheu chao yang king.

In this manner, ſay the Chineſe, life and vigour are diſtributed throughout the body, and a man cannot

have the reputation of a learned phyſician among them, unleſs he be well acquainted with theſe ſix ſources of life, which proceed from theſe twelve origins, and likewiſe the paſſages and canals by which they are conveyed, and the alterations that may happen to them.

After this knowledge of the conſtruction of a human body, which is according to the antient anatomy of the Chineſe, and is, as plainly appears, not very exact, they then proceed to the knowledge of the exterior bodies, which may produce changes in the body of man

Theſe bodies, according to them, are the elements, which are five in number, the earth, metals, water, air, and fire: A human body is compoſed of all theſe elements, which are diſpoſed in ſuch a manner, that in ſome parts one element has more power than the reſt.

Agreeable to this method, fire reigns in the heart and the chief vicera, which lie near it; and the ſouth is the part of heaven which has the principal reference to theſe parts, becauſe heat is chiefly ſituated there, and it is in ſummer that they obſerve the affections of the heart.

The liver and the gall-bladder are referred to the element of air, and both have a relation to the eaſt, which is the place from whence winds and vegetation proceed; and the diſpoſition of both theſe parts ought to be obſerved in the ſpring.

The kidneys and ureters belong to the water, and are referred to the north, whence winter is the propereſt time to obſerve their indications.

The lungs and great inteſtines are preſided over by the metals, as are the weſt and the autumn, which is the time of their indications.

The ſpleen and ſtomach are of the nature of the earth, and they are referred to the middle of the heavens, between the four cardinal points, and the third month of every ſeaſon is the time of their particular indications.

The third part of the body and the gate of life are ſubject to fire and water, and receive the impreſſions of the heart and kidneys, which they communicate to the other parts.

Their reaſoning is much the ſame as ours with regard to the agreement and diſagreement of theſe elements with the body of man, from whence ariſe alterations and diſeaſes.

They pretend to diſcover all the diſpoſitions of theſe parts by the difference of the pulſe; the following are their principles.

The pulſe, ſay they, is cauſed by motion, and this motion is cauſed by the flux and reflux of the ſpirits, which are conveyed by the before-mentioned twelve paſſages to every part of the body.

Every thing, continue they, that cauſes motion, thruſts forwards ſome moveable body, and every thing that is moved either eaſily gives place, or makes reſiſtance; thus as the blood and ſpirits are in a perpetual motion, ſtrike againſt, and preſs the veſſels in which they are conveyed, a beating of the pulſe muſt unavoidably ariſe.

The knowledge and perfect comprehenſion of theſe beatings and percuſſions diſcover the diſpoſition of the body, and the affections which they receive from the elements: one knows by theſe beatings the nature of the blood and ſpirits, as alſo what defects and exceſſes may be found therein, and it is a ſkilful phyſician's buſineſs to regulate and reduce them to their firſt temperament.

Two things are to be obſerved in every motion; the place where it is made, and its duration; the Chineſe phyſicians are therefore obliged to take notice of the places where the pulſe may be examined, and the time of its beating.

They ſeldom practiſe letting-blood, yet it cannot be denied that they are acquainted with it; the uſe of gliſters has been propagated from the phyſicians of Macao; they like this remedy well enough, but call it the remedy of Barbarians, becauſe the knowledge of it came from Europe. Their whole ſcience conſiſts in the knowledge of the pulſe, and the uſe of ſimples, of which they have great variety, and which, according to them, have ſpecifick virtues to cure various diſeaſes.

By the beating of the pulſe alone, they pretend to know what is the occaſion of the diſtemper, and in what part of the body it reſides. In a word, all the ſkilful phyſicians diſcover or predict pretty exactly all the ſymptoms of a diſeaſe: and it is chiefly this that has gained the Chineſe phyſicians ſuch high renown in the world.

At their firſt viſit of a ſick perſon they lay his arm upon a pillow, then put their four fingers along the artery, ſometimes hard and ſometimes gently; they take ſome time to examine the beating, and diſtinguiſh the differences how imperceptible ſoever, and according to the motion more or leſs quick, full or ſlender, uniform or irregular, which they obſerve with the greateſt attention, they diſcover the cauſe of the diſeaſe, inſomuch that without aſking the patient they tell him where the pain lies, whether in the head, the belly, or the ſtomach; or whether it be the liver or ſpleen which is affected; they alſo foretell when his head ſhall be eaſier, when he ſhall recover his ſtomach, and when he ſhall be quite rid of the diſeaſe.

I ſpeak of experienced phyſicians, and not of thoſe people who, without either ſtudy or experience, profeſs the art merely for a livelihood. It muſt be owned, the Chineſe phyſicians have acquired a very amazing knowledge in this matter.

Several inſtances might be given of this, but one ſhall ſuffice: A miſſionary in the priſon of Nanking fell dangerouſly ill; the Chriſtians, who were afraid of loſing their paſtor, prevailed upon a phyſician to viſit him: he came to the priſon, and after he had conſidered the patient, and felt his pulſe with the uſual ceremonies, he immediately made up three medicines, which he ordered him to take, one in the morning, another at mid-day, and the laſt in the evening.

The next night the ſick miſſionary found himſelf worſe, loſt his ſpeech, and they imagined him to be dead; but the following morning there was ſo great a change, that the phyſician, having felt his pulſe, declared that he was cured, and that he had only to obſerve a certain regimen till his health was entirely reeſtabliſhed; and accordingly, by obſerving this method, he was recovered. When ſome of the phyſicians viſit ſick perſons, they bring in their chair, or by a ſervant who follows them, a cheſt with different drawers, which are ſeparated into about forty ſmall compartments well furniſhed with ſimples and roots, which are adminiſtered according to the nature of the diſeaſe; and they are either ſudorific, or ſerve to purify the blood and humours, to ſtrengthen the ſtomach, to diſpel vapours, and to ſtop fluxes, or elſe are gently purgative.

Some of them carry no cheſt, but give a preſcription, and leave the patient at liberty to take them of him, or buy them from the druggiſts, who have large ſhops furniſhed with excellent medicines in every city; ſome think it would undervalue them to diſpenſe medicines, and theſe generally have higher fees than the others.

There are alſo a ſort of quacks, who collect ſeveral receipts, and who after having examined the diſtemper pretend to make a cure, and agree for a certain ſum, which is not to be paid unleſs the patient recovers.

But what moſt enriches the phyſicians is to cure Mandarines of diſtinction, or other wealthy people; for, beſides what they receive every viſit, they have other very valuable rewards.

After the phyſicians have made uſe of the ſimple decoctions, and reſtored health, they depend greatly upon their cordials entirely to extirpate the diſeaſe; they have theſe of all ſorts, which are for the moſt part compoſed of herbs, leaves, roots, fruit, and dried ſeeds.

They have abundance of every kind of ſimples, which are ſold in all the cities of the empire; what one province has not, it borrows from another, and there are fairs where nothing but medicines are ſold, and ſhops filled with nothing but ſimples.

The Chineſe phyſicians allow their patients to drink water, but it muſt firſt be boiled: other food is generally prohibited; and if the patient be extremely hungry they allow him to take but little: their reaſon for this is, that the body being indiſpoſed, the ſtomach is not fit to perform its functions, and that the digeſtion made in this condition is always hurtful.

Their fee for this viſit, and for their medicines, is very moderate: they never return after the firſt viſit, unleſs deſired, which gives the patient liberty to employ another, which is frequently the caſe, when the medicines given by the former do not pleaſe them.

The moſt ſingular part of the Chineſe medicines being the ingenuity of the phyſicians in judging of diſtempers by the beating of the pulſe, it will undoubtedly be very agreeable to learn in what the ſecret of the pulſe conſiſts.

The following treatiſe on the ſecret of the pulſe was made, as all the Chineſe acknowledge, by Ouang chou ho, who lived under the dynaſty of Tſin, that is many hundred years before the Chriſtian æra; but father

Hervieu, an ancient Chineſe miſſionary, who has been at the trouble of tranſlating it from the Chineſe language, imagines that it is rather a collection than a treatiſe made by one and the ſame author.

It is however certain, that this is the moſt antient and valuable thing of the kind in all China. There are ſeveral omiſſions of ſome parts of the text, becauſe they contain nothing but what is elſewhere more plainly expreſſed, or becauſe they would require long explanations to render them intelligible, which, after all, would not be of the leaſt advantage.

The SECRET *of the* PULSE.

THE TEXT.

BY examining the pulſe is the beſt method of underſtanding diſeaſes, and of judging whether they are mortal or not.

The pulſe of the left wriſt muſt be conſulted when the heart is diſeaſed.

The left hand muſt alſo be taken in diſtempers of the liver; but it muſt be carefully examined at the joining of the wriſt with the bone of the cubitus.

The pulſe muſt be examined a little higher than the joint towards the end of the cubitus, in diſtempers of the kidneys; for the right kidney the right hand muſt be taken, and for the left kidney the left hand.

EXPLANATION.

Ming men, the gate of life, is otherwiſe the name of the right kidney.

Remark.

The Chineſe phyſicians are moſtly of opinion, that the right kidney is the ſeminal reſervoir, and this is the reaſon of its being called the gate of life. An ancient author explains the origin of this name in a different manner, and ſays that it is principally the right kidney which converts the blood into the ſeminal liquor.

The Text.

It is very eaſy to diſtinguiſh the ſeveral parts wherein the pulſe is to be felt in the diſtempers of theſe five different noble parts: but, notwithſtanding this, the examination of the pulſe is very difficult in ſome places. The perpetual motion of the circulation, wherein the captain and his train are continually day and night, is in reality determined to a certain number of circulations; but yet there are a thouſand differences in the pulſe, according to the ſeaſon, age, ſtature, and ſex.

Explanation.

The blood [Hiué] is the captain, his train are the ſpirits, [Ki] the blood runs within the veſſels, and the ſpirits without; they are in a conſtant motion of circulation, and ought to make fifty rounds in the ſpace of a day and night: this is the determinate number taken notice of in the text.

Remark.

While a perſon is breathing, that is in the ſpace of an

expiration and inſpiration, the blood and ſpirits move forward ſix inches, and the pulſe generally beats four times: as in twelve Chineſe hours, which contain a day and a night, they reckon thirteen thouſand five hundred reſpirations, it muſt move eight hundred and ten Tchang, a meaſure containing ten Tché or foot of ten inches each in one day: then the longeſt road of the blood and ſpirits in a human body is but ſixteen Tchang, two foot; and conſequently the blood muſt make fifty circulations in one day and night. This is taken from a Chineſe book, but not from this that is now tranſlated.

Though it is tranſlated The perpetual motion of circulation, there is no aſſiſtance given to the expreſſion, for the Chineſe words mean the ſame thing; whence it ſeems natural to imagine, that the circulation of the blood ſo lately found out in Europe has been known about two thouſand years by the Chineſe. However, I am far from venturing to warrant this concluſion; I do not find that the Chineſe phyſicians diſtinguiſh exactly between veins and arteries, nor the road that the blood takes in flowing from and returning to the heart.

Some of the learned among the Europeans, in tranſlating their dictionaries have found words that ſignify according to them, nerves, arteries, and veins: but though I have peruſed the Chineſe phyſical books, and endeavoured to inform myſelf from living authorities, I do not find that theſe words contain exactly the ſame ideas that we have at preſent; and it may be ſaid, that if China formerly had ſuch a knowledge, as certain expreſſions induce one to imagine, they have been ſome time laid aſide.

In tranſlating the Chineſe explanation, I have put, His train are the ſpirits; none of the various ſignifications of the character Ki, was, in my opinion, more a-

greeable to this place: but this character may alſo ſignify vapour, humour, air, &c.

THE TEXT.

Every ſeaſon of the year has its proper pulſe.

In the firſt and ſecond moon, the ſeaſon when wood is predominant, the pulſe of the liver, which anſwers to wood, is Hien, that is a long tremulous motion, ſomewhat reſembling that of the ſtrings of the inſtruments called Tçeng.

In the fourth and fifth moon the pulſe of the heart, which anſwers to fire, is as it were overflowing, Hong.

As for the ſtomach, which anſwers to the earth, its pulſe at the end of every ſeaſon, that is the third, ſixth, ninth, and twelfth moon, ought to have a moderate ſlowneſs, Ouan. In the ſeventh and eight moon, which is the reign of metal, the pulſe of the lungs, which anſwers to it, is ſlender, Sië; ſuperficial, Feou; ſhort, Toan; and ſharp, Sæ.

In the tenth and eleventh moon is the reign of water, to which the pulſe of the kidneys anſwers, and is deep, Tchin; and ſlender, Sië.

EXPLANATION.

That is, if the pulſe of the heart is deep and ſlender, Tchin and Sië; that of the liver ſhort and ſharp, Toan and Sæ; that of the kidneys ſlow, Ouan; that of the lungs overflowing, Hong; and that of the ſtomach long and trembling, Tchang and Hien.

THE TEXT.

The diſtemper is not great, if the alteration is ſuch as an infant may undergo from his mother.

EXPLANATION.

For example, if the pulſe of the heart is ſlow, Ouan; that of the ſtomach full and overflowing, Hong; that of the lungs deep, Tchin.

THE TEXT.

But the diſtemper will be long, if the mother loads the infant.

EXPLANATION.

For example, if the kidneys communicate their diſorders to the liver, or the liver communicate its diſtemperature to the heart.

REMARK.

The explanation is literally tranſlated, but the commentator does not ſeem to expreſs himſelf very exactly.

THE TEXT.

In ſhort, if the huſband and wife do not keep themſelves in order, there are rules to judge if the diſeaſe is mortal or not.

EXPLANATION.

For inſtance, if the heart has the pulſe of the lungs, it is the huſband that has the pulſe of the wife.

THE TEXT.

To have the pulſe of the lungs in the ſpring-ſeaſon

is mortal; for the pulſe of the heart is ſet aſide, and the heart is the ſon of the liver, which has the kidneys for its mother, and the ſtomach for its wife.

EXPLANATION.

Wood, fire, earth, metal, water; this is the order of the generation of the five elements: Earth, wood, water, fire, metal; in this order they deſtroy each other: Of the five Tſang, or noble parts above mentioned, the lungs anſwer to metal: Metal deſtroys wood. Thus in the ſpring, which anſwers to wood, it is mortal to have the pulſe of the lungs.

THE TEXT.

It is not good to have the pulſe of the ſtomach in the ſpring, the pulſe of the heart in the winter, that of the lungs in ſummer, and that of the liver in autumn.

Thus you have what relates to the different pulſes proper to the different ſeaſons, with reſpect to the order of the generation, or the oppoſition of the five elements.

EXPLANATION.

In a paſſage of this book it is ſaid, that when in the ſpring one has the pulſe at the end of the four ſeaſons, otherwiſe called the pulſe of the ſtomach, which anſwers to the earth, the diſtemper generally is not dangerous, and is frequently got over without taking any drugs.

Here it is ſaid, that it is mortal to have the pulſe of the ſtomach in the ſpring; how then can theſe two aſſertions agree? In the following manner; for ex-

ample, when in the ſpring the pulſe of the liver is ſlow and tremulous, though it has this ſlowneſs proper to the pulſe of the ſtomach, if it preſerve the tremulouſneſs proper to it, the alteration is not great, but if it loſes the tremulous quality, and has nothing but the ſlowneſs proper to the pulſe of the ſtomach, which anſwers to the earth, the diſeaſe will then be dangerous.

The earth, when it is predominant, generates metal: metal deſtroys wood, which anſwers to the liver and ſpring: This is the ſolution of the propoſed difficulty, and the meaning of the place where the text ſays, If the huſband and wife do not keep themſelves in order, &c. Let the proper pulſe of the reſt be applied to this.

REMARK.

The Chineſe refer the two firſt months of the ſpring to wood; the two firſt of the ſummer, to fire; thoſe of the autumn, to metal, and thoſe of the winter, to water; and the laſt month of every ſeaſon they refer to the earth.

When ſpeaking of the five planets, they call Saturn the planet of the earth, Jupiter the planet of wood, Mars the planet of fire, Venus the planet of metal, and Mercury the planet of water.

I cannot ſay whether the five elements have given names to the five planets, or the number of planets have been determined by the five elements.

THE TEXT.

Great care muſt be taken not to confound the various kinds of the pulſe, which in ſome manner reſemble each other; for example, the pulſe that we call

Hien, and that which we name Kin; the pulſe Sæ, and the pulſe Ouei; the pulſe Feou, and the pulſe Kong; the pulſe Hong, and the pulſe Che, have ſome relation to each other; and yet their indications are very different, and frequently contrary. The pulſe called Tchin, and that named Fou, come to the ſame end by different ways: As for the two pulſes, Siu and Yo, they have a kind of relation even in their indications.

REMARK.

You will find the explanation of theſe various names frequently in the text: However, as a regular method requires that all the terms ſhould be explained in the ſame order they are mentioned, that the defect of the compiler may be ſupplied, I ſhall explain the different ſorts of pulſes of which he ſpeaks.

When the pulſe has a long and tremulous motion, ſomewhat reſembling the ſtrings of the inſtrument Tçeng, it is called Hien.

When it has a ſhort and quick tremulous motion, like that of the cords of the inſtrument called Kin, it is named Kin.

When the pulſe raiſes a ſenſation in the finger, reſembling the motion of a knife when it ſcrapes a bamboo, it is called Sæ.

When the pulſe is ſmall, much like a ſilken thread, it is called Ouei.

When the pulſe, upon one's gently laying the finger on it, is ſenſible, but diſappears when more cloſely preſſed, it is termed Feou, ſuperficial.

When the pulſe ſeems under the finger much like the hole of a flute, leaving a kind of empty ſpace in the middle of two ſenſible extremities, it is named Kong.

Hong ſignifies overflowing, and Che ſignifies full;

Tchin ſignifies deep, low; Fou, lying low, and concealing itſelf; Siu is when it is perceived by the finger to be like a drop of water; Yo is weak.

THE TEXT.

One muſt apply diligently to underſtand the properties of the pulſe, and to draw proper conſequences from it; after which, by a ſufficient knowledge of drugs, one may undertake the curing of diſeaſes.

If the pulſe of the wriſt is Kie, quick, then there certainly is a pain in the head; if it is Hien, long and tremulous, it is a ſign of the heart-burn; if it is Kin, ſhort and tremulous, it indicates the cholick; if it is Ouan, moderately ſlow, the ſkin is as it were in a ſleepy ſtate; if it is Ouei, ſmall, the breaſt has taken cold; if it is Sou, vaſtly quick, there is a ſurpriſing heat at the orifice of the ſtomach; if it is Hoa, ſlippery, blood is predominant; if it is Sæ, ſharp or rough, there is a failure in the ſpirits; when it is Hong, overflowing, the breaſt and ſides are too full, and the patient feels an oppreſſion there; when the pulſe of the wriſt is Tchin, deep and low, the back moſt aſſuredly is pained.

When the pulſe ſeems to be Feou, ſuperficial, and Ouan, moderately ſlow, exactly at the joining of the wriſt with the Cubitus, there is a Nauſea, or want of appetite.

If it be Kin, ſhort and tremulous, there is an oppreſſion and fulneſs of flatulent matter, which cannot eaſily be cured.

If the pulſe is Yo, weak, and Sou, in a hurry, there is great heat in the ſtomach; if it is long and tremulous, Hien and Hoa, ſlippery, the illneſs has been occaſioned by cold in the ſtomach.

If it be Ouei, ſmall, the heart is as it were oppreſſed with fulneſs.

If it is Tchin, deep, low, there is a weight and dull pain in the region of the diaphragm, and this proceeds from plethora; whereas if it be Siu, ſoft, and as it were moiſt, though there is a ſwelling in the lower parts, from the reins to the feet, it proceeds from emptineſs, and being exhauſted, it will be therefore neceſſary as ſoon as poſſible to diſſipate the watry humours: In ſhort, if the pulſe at the joint is Fou, lying very low, and concealing itſelf, there is a diſorder at the orifice of the ſtomach, which requires nothing but purgation.

If the pulſe at the extremity of the Cubitus be Hoa, ſlippery, and belongs to a woman, it is evident that her Catamenia are not regular; if a man, the laſt digeſtions are not perfect.

If it is Fou, lying very low, the digeſtions are imperfect in the Primæ Viæ.

If it is Ouei, ſmall, there is a violent cholic: If it is Yo, weak, and Ouan, moderately ſlow, there is an exceſs of heat in the ventricle, and a diſorder in the orifice of the ſtomach.

If it is Tchi, ſluggiſh, very ſlow, the Tſiao or lower fire-place and ſtomach have ſuffered from cold, there is a Nauſea, and ſometimes a vomiting.

If it is Sæ, ſharp or rough, there is a tenſion in the belly, ſometimes of the Scrotum.

If it is ſometimes Hien, long and tremulous, ſometimes Kin, ſhort and tremulous, the belly itſelf is pained.

If it is Tchin, deep, the kidneys are affected.

In a word, if it be Siu, ſoft, and as it were moiſt, Sou, in a hurry, Feou, ſuperficial, or Koug, empty in the middle, like the belly of a flute, the urine is red

and ſharp: Thus exactly examining every thing, no material point will eaſily eſcape notice.

REMARK.

The Chineſe diſtinguiſh three Tſiao or fire-places of natural heat in the body, or that which we call the trunk; but this ſhall be hereafter explained.

The text explaining in this place the various pulſes that may be found in the wriſt, the joint of the wriſt, with the Cubitus, or the extremity of the Cubitus, and ſpecifying their indications, does not make a diſtinction, as in other places, between the right hand and the left, but only the diſtinction of the three different places where the pulſe is left in each hand.

It muſt be imagined, according to this notion, that the diſtinction of right and left, which is of ſo much conſequence on other occaſions, has nothing to do with the above-mentioned indications.

THE TEXT.

When you feel a woman's pulſe at the extremity of the Cubitus, and find it to be conſtantly Hoa, ſlippery, it is a certain ſign that ſhe is with child.

If you feel the pulſe at this place of the right hand, and find it at the ſame time Hong, overflowing, ſhe is pregnant of a daughter.

If it is at the left hand that the ſame is found, ſhe is with child of a ſon.

If the pulſe at the ſame time is found the ſame in both arms, the woman is pregnant with two children. He will never be deceived who underſtands this method.

You muſt carefully examine the motion and ſpace

of time between each pulſe, when you would know if a patient will recover of his diſtemper.

If the motion is hard and keen, and at the ſame time very quick, as if the beatings were ſo many ſtrokes of an arrow or ſtone repeated very faſt: If on the contrary it is looſe, ſomewhat reſembling a ſtring which is ſpinning; if it as it were pricks like the beak of a bird, and this motion is ſuddenly interrupted; if it is ſlow and like drops of water which ſometimes fall through a crack, inſomuch that it ſometimes ſeems to be quite gone, and then begins again; if it is embarraſſed much like a frog in certain weeds, inſomuch that it ſeems unable to get backward or forward; if it friſks like a fiſh that is diving every minute, and then comes up again ſo ſlow that one would imagine it was held by the tail, and yet makes its eſcape; why then the beſt of theſe pulſes is worth nothing at all: Had a phyſician the philoſopher's ſtone, he could not recover ſuch a patient from his diſtemper.

But there are certain diſtempers wherein the patient, without having ſuch a pulſe as has been juſt deſcribed, has his hearing diſturbed, loſes his ſpeech, or has a ſmall ſqueaking voice, ſometimes one cannot even diſcover any motion of the pulſe either in the wriſt or joint: If however at the extremity of the Cubitus, the pulſe is ſtill ſenſible, if the beating and the ſpaces between have much the ſame extent, and the motion continues pretty regular for ſome time, though the patient appears to be at the laſt extremity, he will not die; at leaſt he may be ſaved by a ſkilful phyſician. It is the ſenſe of an antient text that ſays, The tree is without leaves, but the root is ſtill alive.

The Manner of feeling the Pulſe.

On the left the heart, the ſmall inteſtines, the liver, the gall, the left kidney; on the right, the lungs, the large inteſtines, the orifice of the ſtomach, the ſtomach itſelf, and the right kidney.

EXPLANATION.

The pulſe of the wriſt belonging to the left hand hath relation to the heart and ſmall inteſtines; the pulſe of the joint of the ſame ſide ſhews what relates to the liver and gall; the pulſe at the extremity of the Cubitus of the ſame ſide has reference to the left kidney and the bladder; for if the text has not expreſſed the bladder, it is becauſe he could not bring it into the verſe.

REMARK.

Not only this paſſage, but almoſt the whole book is in verſe.

THE TEXT.

On the right [at the wriſt] the lungs, the large inteſtines; [at the joint] the orifice of the ſtomach itſelf; [at the extremity of the Cubitus.]

EXPLANATION.

It is neceſſary to add to the left kidney the three Tſiao, or fire-places; the reaſon of its being omitted in the text is becauſe it would not agree with the verſe.

REMARK.

These three Tsiao will be hereafter explained.

THE TEXT.

Let us pursue this doctrine in examining women's distempers, with this exception, that in women the pulse of the Cubitus, in its natural condition, is quite different from that of men.

EXPLANATION.

In women it is strong, and in men, weak; it is a distemper when it is otherwise.

THE TEXT.

You must be attentive and exact in examining and following each of these pulses, and the physician likewise himself should be healthy, and in a state of tranquillity. As for the situation of the hand, it depends on the situation wherein the sick person is; if the latter hath his hand so placed that the back appears, and not the palm, the physician must also turn his.

Nine Heou result from these three pulses. You should be accustomed to distinguish the pulses rightly beneath the fingers, and to receive, at the same time, the impression upon the mind as distinctly as from a seal.

EXPLANATION.

The wrist, the joint, the extremity of the Cubitus,

are the three places where the pulſe is felt, by applying the three longeſt fingers to them, and theſe are named the three Pou.

The pulſe is either very ſuperficial, or very deep, or between both, in theſe three places: Theſe are what the text calls Heou, three times three making nine.

THE TEXT.

The function of the large inteſtines, and the lungs, has a tendency to proceed, conduct, and evacuate: The function of the heart, and ſmall inteſtines, tends to receive, contain, and amend.

EXPLANATION.

The large inteſtines thruſt forward, and evacuate the groſs and impure Fæces: As for the lungs, they neither thruſt any thing forward nor evacuate; but as there is a relation between the large inteſtines and the lungs, therefore the text joins them together.

REMARK.

This is very true what the Chineſe commentator ſays, that according to the art of medicine in China the lungs and large inteſtines ſympathize, as well as the heart and the ſmall inteſtines; but he muſt certainly be miſtaken in ſaying that this relation is the only reaſon for which the lungs are mentioned, as though they neither thruſt forward nor evacuate; Do the lungs not evacuate phlegm, and ſend forward the blood and other matter?

He is alſo very wrong in what he ſays of the heart, and the ſmall inteſtines: The text may admit of this

ſenſe, viz. That the function of the ſmall inteſtines is to receive the aliments in order to digeſt them, and convert them into chyle; the function of the heart is to receive the chyle, to digeſt it, and convert it into blood.

THE TEXT.

The function of the orifice of the ſtomach and ventricle, which are contiguous to each other, is to yield mutual aſſiſtance for the adminiſtration of the five grains [that is to ſay the aliments] the function of the kidneys and bladder is to filtre, and evacuate the liquid matters.

What they call the three Tſiao, or the three hearths or fire-places, are not ſenſible and diſtinct Viſcera: They aſſign their ſituation with reference to the other parts, to which they anſwer.

EXPLANATION.

The Tſiao are ſaid to be three in number, the ſuperior, the middlemoſt, and the inferior.

The ſuperior is the region of the heart; its principal effect is to retain and contract, without which how could the heart govern the blood and ſpirits? Or could they otherwiſe govern the blood and the air? For the character admits of both theſe caſes.

That of the middle is the region of the Sternum; it neither retains nor ſends forwards; its effect is to cook, for without it the ſtomach could not digeſt the aliments.

The inferior is the region of the navel, and an inch beneath: Its effect is to ſeparate and ſend forward, without which the liver and kidneys could not filtre and ſeparate the liquids as they generally do.

THE TEXT.

The liver and bladder both aſſiſt in the filtration of humours; they have a conſiderable communication with the eyes, which depend very much upon the Viſcera. A man of underſtanding, who has well conſidered the natural ſituation, the juſt temperature, and the relation of the noble parts, will preſently attain the knowledge of diſeaſes.

From the joining of the arm with the hand there is a bone ariſes; there the pulſe ought to be felt, which is called the gate, or the joint; before this joint is that which is called the ſocket of the thumb, Tſun keou, the wriſt; behind the ſame joint is what we call the Cubitus, Tché; the wriſt is called Yang; the Cubitus, Yn, in the language of the phyſicians.

You muſt be careful in placing the fingers exactly upon the veſſels where they ſhould be, when you feel the pulſe of theſe three places.

REMARK.

The bone which goes from the hand to the elbow is called Tché; the ſame character alſo ſignifies a foot or a cubit, becauſe the one is the meaſure of the other.

They call the wriſt Tſun keou, which ſignifies a mouth or ſocket, or paſſage of the length of an inch, becauſe it is the tenth part of the Cubitus, and they call an inch the tenth part of a foot or cubit: This is taken from the Chineſe themſelves.

Yang and Yn are two terms applicable, and applied by the Chineſe in almoſt every diſtinction of two things, wherein one gives place to the other in ſome

particular matter; for example, in perfection, rank, &c.

The Text.

You may be aſſured that there is a pain in the head, if you diſcover at the Yang [the pulſe of the wriſt] what is called Hien, [a long tremulous motion, as in the ſtrings of the inſtrument Tçeng.]

If you find the ſame motion at the Yn, [the pulſe at the extremity of the Cubitus] there is a pain in the belly.

If the Yang is in a hurry there is an inclination to vomit, and a pain in the head: If the Yn is then very ſlender and very ſmall, there is a motion of the entrails, and a diarrhœa: If the Yang is full you may obſerve the face red, and puff up: If the Yn is at the ſame time ſmall and ſlender, there will malignant ſweats come as it were unawares, and a conſumption of the lungs will enſue.

When the Yang is full, ſtrong, and ſlippery, there is a difficulty in ſpeaking.

If the Yn is then in a hurry there is a great heat in the ſtomach, and the breath has an ill ſmell.

When the Yang is ſmall, ſuperficial and weak, there is a want of warmth in the heart.

If at the ſame time the Yn is ſlippery, the aliments are ill digeſted, and the ſtomach is out of order.

Before and behind the joint you may, by this ſimple diſtinction of Yn and Yang, find out the different indications of the pulſe, and this is a pretty good method.

Remark.

In this laſt ſentence the commentator gives a different ſenſe from that of the tranſlation: He pretends

that we muſt conſider the fore and the hind part of the joint together, meant by Yang and Yn, and to ſee if this Yang and Yn are both Yang, or both Yn; and he underſtands, by this ſecond Yang, a high ſuperficial pulſe, and by this ſecond Yn a pulſe lying very deep; if both are Yang, that is, if at the wriſt, or at the extremity of the Cubitus, the pulſe is ſuperficial, the ſource of the diſtemper is in what is called Piao, the exterior, the ſkin, the fleſh, &c. if on the contrary they are both Yn, that is, if at the wriſt, and the extremity of the Cubitus, the pulſe lies very deep, the diſeaſe is in what they call Li, that is in the five noble parts, &c.

It is hard to ſay whether the commentator ſays true or not, but the text has not theſe two kinds of complicated Yn or Yang, nor has he ſpoke of the Piao or Li, nor of the ſuperficial or the deep, and theſe lines ſeem to me to be nothing more than a general concluſion of what went before.

THE TEXT.

When the pulſe is natural, and the health perfect, in the ſpace of one reſpiration, which conſiſts of an inſpiration and expiration, there are four pulſes; one pulſe more preſages nothing bad, but if there wants one it ſhews a defect of natural heat, and if there be two wanting it is very bad.

If in the ſame ſpace there are ſix pulſes, there is an exceſs of heat, if there are ſeven the exceſs is conſiderable, but if they ariſe to eight the danger is very great, and if more the patient will not live long.

If a pulſe beats but once in the ſpace of a reſpiration, the diſtemper is then conſiderable and dangerous; but is much worſe if it beats but once in the

ſpace of two, for it is a certain ſign of the near approach of death.

Exceſs of heat occaſions too many beatings of the pulſe, and exceſs of cold too few: This is a conſtant tradition of all ages; the different degrees of it are ſet down in the book of the eighty one difficulties.

In the ſpring the long tremulous pulſe Hien; in the ſummer the overflowing Hong; in autumn ſoftneſs of hair or feathers; in winter hardneſs of ſtone: It is neceſſary to ſubdivide theſe ſeaſons into Tſie ki.

EXPLANATION.

By the character Tſie is underſtood the ſubdiviſions which are made of the four ſeaſons: Every ſeaſon has ſix Tſie: By the character Ki is underſtood the different temperatures of the air.

THE TEXT.

A ſoft motion, and pretty ſlow, ſomewhat reſembling that of the branches of a fine willow-tree agitated by the breath of a gentle zephyr in the ſpring of the year: This is the property of the pulſe which is called the pulſe of the ſtomach, which anſwers to the end of every year: However nice theſe diſtinctions are, an experienced phyſician will not only perceive them, but he will be able at length not to forget one.

The Explanation of the Pulſe called The Seven Piao.

REMARK.

[That is to ſay, The Seven Externals] becauſe they

are in reality more external, and more ſenſible than the reſt, which will afterwards be taken notice of.

THE TEXT.

Feou is when, laying the finger gently without ſupporting it, the pulſe is perceived, and gives a ſenſation like that of the blade of a little onion.

REMARK.

In the tranſlation I call it ſuperficial.

THE TEXT.

Kong is when we diſtinguiſh, as it were, two extremities, and an empty ſpace in the middle.

REMARK.

As if the finger was put upon a hole of the flute; the Chineſe themſelves make this compariſon.

THE TEXT.

Hou is as if one touched or put ones fingers among pearls: They move backward and forward very quick, being ſmooth and ſlippery.

REMARK.

This is the ſame that is called a ſlippery pulſe in the tranſlation.

THE TEXT.

Ché is, as it were, a property of the Feou, ſuperficial; and as if the blade of a ſmall onion was full and ſolid within.

REMARK.

I call it a full pulſe in the tranſlation.

THE TEXT.

Hien reſembles the ſtrings of Tçeng.

REMARK.

This I name a long tremulous pulſe.

THE TEXT.

Kin reſembles the ſtrings of the inſtrument Kin.

REMARK.

I call it a ſhort tremulous pulſe.

THE TEXT.

Hong is when the pulſe riſes the higheſt, and the beats are very ſtrong.

REMARK.

I call it overflowing; the Chineſe character admits of this ſenſe.

THE TEXT.

Theſe are the ſeven Piao, which are Yang, like the beſt ſide of a ſtuff with regard to the eight following called Li, which are like the wrong ſide, and conſequently Yn.

An Explanation of the Pulſes called The Eight Li.

REMARK.

That is to ſay the internal, becauſe they are in effect more inward, and leſs ſenſible than the ſeven juſt explained.

THE TEXT.

Tchin is when there is a neceſſity of preſſing hard to find the pulſe.

REMARK.

This I call a deep pulſe.

THE TEXT.

Ouei is when the pulſe feels under the finger as ſmall as a thread.

REMARK.

I call it the ſmall pulſe.

THE TEXT.

Cuan is when it is moderately ſlow.

Sæ is when the beats make an impreſſion, which has ſome relation to that of a knife ſcraping a bamboo.

REMARK.

I call it ſharp; the Chineſe character properly ſignifies rough.

THE TEXT.

Tchi is when it comes very ſlowly, and as it were concealing itſelf.

REMARK.

This I call the ſluggiſh, or ſlow pulſe.

THE TEXT.

Fou is when it flies, if I may ſo ſpeak, very low, and is as it were concealed under the bone, inſomuch that you muſt preſs very hard to diſcover it, and even then it is not very diſtinct.

REMARK.

I call this flying low; the Chineſe character ſignifies to bend down.

THE TEXT.

Siu is when it yields a ſenſation like a drop of water when touched.

REMARK.

I call it the ſoft, and as it were the fluid pulſe.

THE TEXT.

Yo is when preſſing moderately one perceives it, but not in a diſtinct manner, and which yields a ſenſation not unlike an old piece of ſtuff when it is touched; and when preſſing a little harder it is not perceived at all.

An Explanation of the Pulſes called The Nine Tao, or The Nine Manners.

Tchang is when it yields a ſenſation like a ſtaff, or the handle of a ſpear.

REMARK.

I call it long, which is the ſignification of the character.

THE TEXT.

Toan is when it is perceived almoſt like an individual point.

REMARK.

I call it ſhort, which is the meaning of the character.

THE TEXT.

Hiu is when the finger is laid on gently, and the beating of the pulſe is not obſerved.

REMARK.

This I call empty, it being the ſignification of the character Hiu.

THE TEXT.

Tſou is when it ſeems confined, and moves with difficulty, particularly at the wriſt.

Kie is when, being otherwiſe a little ſlow, it ſeems ſometimes to ſtop.

REMARK.

I call it the embarraſſed pulſe.

THE TEXT.

Tai is when it is found ſuddenly to ſtop, and returns with difficulty.

REMARK.

This Tai is differently explained in another place.

THE TEXT.

Sié is when it is very fine and ſlender, and ſeems like a ſingle hair.

REMARK.

I call it the ſlender pulſe.

THE TEXT.

Tong is when the ſenſation that it yields has relation to that made by ſtones when they fall into the water.

REMARK.

I call it the moveable pulſe, which is the meaning of the character Tong.

THE TEXT.

Ké is when it is found hard and ſmooth like a drum-head.

REMARK.

I call this pulſe hard, which ſignification it has in other places.

THE TEXT.

Theſe nine different manners muſt be carefully diſtinguiſhed, which cannot be eaſily done.

REMARK.

Very few of the Chineſe phyſicians, I have been informed, at this time examine after theſe nine ways, being ſatisfied with the ſeven pulſes called Piao, and the eight named Li; nay there are ſome who neglect them all, being content to judge, as well as they can, concerning the nature of the diſeaſe by the height and depth of the pulſe, and by its ſlowneſs and quickneſs.

Theſe pulſes are all explained over again near the concluſion of this treatiſe, and ſome of them have a different name from what they have in this place, and a different explanation, with reſpect to the terms, though very near the ſame as to the ſenſe; theſe differences and repetitions ſtrengthen the opini-

on of this being a compilation, and not written by one hand.

Indications of theſe ſeveral Pulſes.

The ſuperficial Feou indicates windineſs: The Kong, which has two ſenſible extremities, and a ſpace in the middle, indicates a want of blood.

REMARK.

I determined the ſenſe of this agreeable to the explanation, as the text does not expreſs whether there is a want of or too much blood.

THE TEXT.

The ſlippery [Hoa] indicates plenty of phlegm.
The full [Chĕ] ſignifies heat.
The long tremulous [Hien] wearineſs.
The ſhort tremulous [Kin] ſharp pain.
The overflowing [Hong] exceſs of heat.
The ſmall [Ouei] too much cold, they both indicate obſtructions in the lower-belly.

The deep [Tchin] indicates pain proceeding from intercepted air, or elſe from the interruption of the courſe of the ſpirits: The Chineſe character admits of both ſenſes.

A ſlow pulſe [Ouan] when it ought not to be ſo, indicates a kind of rheumatiſm in the breaſt.

The ſharp pulſe [Sæ] indicates barrenneſs, or a diſpoſition to it, as well in the male as female ſex.

The ſluggiſh [Tchi] ſhews a defect of internal heat.

The flying-low [Fou] indicates a conſiderable ob-

ſtruction, which ſhuts up, as it were, the paſſages of the blood.

The ſoft or fluid [Siu] indicates ſpontaneous heats, and a diſpoſition to a conſumption.

The weak [Yo] ſhews a great waſting, and dull pains as it were in the bones.

The long [Tchang] ſhews that the ſpirits are in good quantity and good order.

The ſhort [Toan] ſhews that they fail, or are troubled.

When the pulſe is ſlender, like a hair, it is a ſign of the failure of the ſpirits.

When it is variable [Tai] they are in diſorder.

The pulſe embarraſſed, confined, and as it were in a ſtrait, [Tſou] indicates exceſs of heat.

The empty pulſe [Hiu] commonly follows a great loſs of blood: It is accompanied with vain fears and convulſive motions.

The hurrying pulſe [Sou] which was not placed before among the nine manners, indicates inquietudes of another kind, and a delirium, at which time the diſeaſe is conſiderable and dangerous.

The hard pulſe [Kie] indicates a loſs of the ſeminal liquor in men, and of blood in women.

REMARK.

I know not for what reaſon the embarraſſed pulſe [Kié] and the moveable [Tong] are omitted in theſe indications.

EXPLANATION.

When a ſick perſon has a long pulſe [Tchan] eſpecially if it is a little ſlow at the ſame time, the diſtemper is commonly eaſy to be healed; on the contrary in

almoſt all diſeaſes the ſhort pulſe [Toan] indicates danger and difficulty of cure.

THE TEXT.

The Reſemblance and Difference of various Pulſes.

The ſuperficial pulſe [Feou] reſembles the pulſe called [Kong] with this difference, that the latter ſeems empty in the middle, the former not: The ſuperficial [Feou] is alſo like the overflowing [Hong] the difference lies in one's being ſtronger than the other; the overflowing having much ſtrength, the ſuperficial but little: The ſuperficial [Feou] has ſome ſort of relation with the empty pulſe [Hiu,] they both yielding a ſlight ſenſation under the finger; but this proceeds from very different cauſes; it is want of ſtrength in the empty pulſe, whereas in the ſuperficial it proceeds from not being ſufficiently preſſed; the nature of the pulſe being ſuch, that in laying on the finger without preſſing it is perceived, and diſappears if it be preſſed.

The ſlippery pulſe [Hoa,] and the moveable [Tong,] have a relation very like that of pearls being moved in a veſſel, and ſtones moved in the water, one is more diſtinct than the other. The ſlippery [Hoa] has likewiſe a relation with the hurrying [Sou;] but the hurrying [Sou] has a greater number of beats in the ſame ſpace of a reſpiration.

The full [Che] ſomewhat reſembles the hard [Kie,] but the hard never changes by being more or leſs preſſed; whereas the full becomes ſtronger and longer, if the fingers be laid on more hard.

The long tremulous [Hien,] and the ſhort tremulous, have relation to each other; the latter expreſſes the eſſential character of the tremuloufneſs, which

is common to them both; the former expreſſes its condition with much greater ſtrength.

The overflowing [Hong,] and the large or ſtrong [Ta,] very much reſemble each other; but the overflowing [Hong,] though preſſed hard, always preſerves its ſtrength, which does not happen every time when the pulſe is ſtrong [Ta.]

The ſmall [Houei,] and the ſharp [Sæ] have ſome relation, but the ſharp is more ſhort and ſluggiſh than the ſmall: [Sie] the ſlender or fine is properly the ſmall, [Ouei,] becomes fine as a hair or down.

The deep [Tchin,] and the flying [Fou] are very much alike; the latter is only deeper, and is not ſo eaſily diſcovered.

The ſlow, [Ouan,] and the ſluggiſh [Tchi,] differ only in this, that the firſt is moderately ſlow, in compariſon of the other: The ſluggiſh [Tchi,] and the ſharp [Sæ] have ſome reſemblance; but the ſluggiſh [Tchi] has but three beats in the ſpace of a reſpiration, whereas the ſharp [Sæ] has a fourth, though a little embarraſſed.

The weak [Yo,] and the ſoft [Siu,] are very much alike; the latter is ſmall, ſoft, and ſeems moiſt; the former has nothing but what is neceſſary to its being felt under the finger.

The three pulſes abovenamed, Kie, Tſou, Tai, the embarraſſed, the confined, the variable, though they reſemble each other, have alſo their differences; the firſt has a juſt ſlowneſs, whereas the ſecond is in a hurry; the ſpaces between the beats of the ſecond are not regular, and thoſe of the third are; the ſcattered pulſe [San] reſembles the pulſe called [Ta] the great: The difference is that the firſt is looſer, more ſlow and ſuperficial, whereas the ſecond has even ſome conſiſtency in it.

Remark.

The above expoſition of the pulſe has no pulſe called ſcattered [San,] which is another proof that theſe verſes were compoſed by various hands.

The Text.

Seven Cautions which muſt be obſerved by a Phyſician when he is about to feel the Pulſe.

1. He muſt be in a peaceable diſpoſition of mind.
2. He muſt be as attentive as poſſible, laying aſide even the ſmalleſt diſorder or abſence of mind.
3. With regard to his body he ſhould alſo be in a ſtate of tranquillity, inſomuch that he ought to find his reſpiration free and regular.
4. After he has laid his finger ſoftly, and touched lightly the ſkin at the places undermentioned, he ſhould examine that which regards the ſix Fou.
5. After this let him lay on his fingers more hard, moderately preſſing the fleſh to examine how the pulſe is, which is called the pulſe of the ſtomach, the ſituation whereof, ſays the commentator, ought to anſwer to the moderate temperature of the four ſeaſons.
6. Then let him preſs ſo hard as to feel the bone, and let him examine what relates to the five Tſang.
7. Let him examine the quickneſs and ſlowneſs of the pulſe, and if the number of its beats be more or leſs than it ought to be in the ſpace of a reſpiration.

Remark.

The five Tſang are the heart, the liver, the orifice

of the ſtomach, the lungs, the kidneys; the ſix Fou are the ſmall inteſtines, the gall-bladder, the ſtomach, the large inteſtines, the bladder, and that which they call the three Tſiao, the three fire-places or ſtoves.

THE TEXT.

Seven Kinds of Pulſes which indicate Danger of Death.

When the pulſe is perceived, under the fingers, to bubble irregularly like water over a large fire; if it be in the morning when the pulſe is felt, one may affirm that the patient will not live till night.

The patient is as near the approach of death, if the pulſe ſeems like a fiſh whoſe head is ſtopped in ſuch a manner that he cannot move, but has a friſking tail without the leaſt regularity; the kidneys are affected when this is the caſe.

There is danger of death, but it is not ſo very near, when the pulſe, after having been in a hurry, ſuddenly changes, and becomes ſlow and ſluggiſh.

If the pulſe, by the hardneſs of its beats, reſembles in ſome ſenſe a round ſtone, or dry earth ſhot out of a croſs bow, the lungs and the ſtomach want ſpirits, and this is not a ſlight failure, but a rooted diſtemper.

If the pulſe ſeems like drops of water that fall into a room through ſome crack, or any ſmall hole in the roof, and when in its return it is ſcattered and diſordered much like the twine of a cord which is unravelled, the bones are dried up even to the marrow.

Death is alſo near when the motion of the pulſe, at the extremity of the Cubitus in both arms, reſembles the pace of a frog when he is embarraſſed in the weeds, or that of a toad.

If the motion of the pulſe reſembles the haſty pec-

king of the beak of a bird, there is a defect of ſpirits in the ſtomach, and one may conclude that the heart does not perform its functions well, and that the blood is in a bad ſtate.

EXPLANATION.

There are ſeveral pulſes which indicate the danger of death: I ſhall fully explain them, that thoſe who apply to theſe matters may underſtand them more clearly.

Fou foe, the bubbling of the kettle, otherwiſe Yong Siuen, a bubbling ſpring, is the name of the firſt pulſe: This is when the pulſe always ſeems to throw itſelf outward, ſomewhat like the bubbles which ariſe upon a boiling liquor; the patient will not live a day when his pulſe is in this condition, and no more medicines need be given him.

Feou ho, a union or continuity of waves, is the name of the ſecond; that is when the latter beat incroaches upon the former, not unlike one wave's getting ground of the other before the firſt is levelled.

Tan che, the ſtone or bullet of a croſs-bow, is the name of the third; that is when the pulſe coming from between the bones, beats hard and dry againſt the fingers.

Tchio tſo, the pecking of a bird, is the name of the fourth; that is when the pulſe beats three or four times in a hard and ſharp manner againſt the fingers, then ceaſes a while, and returns in the ſame manner like a bird pecking grain.

Vou leou, a crack by which the water drops into a houſe, and when it has ceaſed for ſome time the pulſe beats feebly again, like a ſmall drop that ſlides thro' a crack, is the name of the fifth: This pulſe, and the

precedent, indicate that the ſtomach, heart, and lungs are in a very bad ſtate.

Kiai ſo, a ſtring that is unravelled, is the name of the ſixth; that is when the pulſe is diſordered and diſperſed in ſuch a manner that one cannot perceive the return of any regular motion: Then the five Tſang are in a bad condition.

Yu tſiang, the friſking of a fiſh, is the name of the ſeventh; that is when the beating of the pulſe being generally ſuperficial there are deep ones mixed with them; it is felt, and then diſappears, nor is it known what is become of it; the kidneys ceaſe to perform their functions.

Hia yeou, the gatt of a toad, is the name of the eighth; that is when the pulſe being felt ſoftly it is not perceived for ſome time, becauſe it is deep, [Tchin] and ſuddenly there appears a ſuperficial beating, [Feou] but weak, which preſently ceaſes, and after ſome time performs the ſame over again: At that time the ſtomach and its orifice are in a very bad ſtate.

Yen tao, otherwiſe Siun tao, the ſtrokes of a knife following each other, is the name of the ninth: This is when the pulſe being fine and ſlender, like a ſilken thread, has nevertheleſs hard and cutting beats, like the ſtrokes of the point of a knife or a needle.

Tcheouen teou, rolling peaſe, is the name of the tenth: This is when the beats are pretty ſtrong, very ſhort, hard, and ſharp; the ſpirits of the [San yuen] three principles abſolutely fail.

REMARK.

What is to be underſtood of theſe principles [San yuen] I have not met with in any book.

The Sequel of the Explanation.

San ye, ſcattered leaves, is the name of the eleventh; that is when the motion of the pulſe imitates the leaves that fall from the trees by irregular intervals.

Ouei tou, earth thrown thereon, is the name of the twelfth; that is when hardneſs and emptineſs at the ſame time is found at the motion of the pulſe.

Hiuen yong, a deep and dangerous impoſthume, is the name of the thirteenth; that is when, in feeling the pulſe it feels, under the fingers, like the prickings of an impoſthume that does not eaſily become ripe.

Yn yuen, like a little round ball, is the name of the fourteenth; that is when the pulſe is ſo ſlippery that if the fingers are not preſſed hard it will eſcape.

Yu kiong, reſembling a peſtle, is the name of the fifteenth; that is when the beats are at the ſame time very high and full.

Ju tehoui, like the breath of a man who puffs and blows, is the name of the ſixteenth; that is when the pulſe ſeems always to thruſt outwardly without remitting.

Pie lie, the rolling of thunder, is the name of the ſeventeenth; that is when the pulſe, being at firſt pretty ſtill, falls immediately into a hurry of beating, and afterwards diſappears, ſomewhat reſembling a ſlight ſtorm that is diſperſed.

There is alſo another pulſe called Y, overflowing; that is when at the wriſt the blood, inſtead of proceeding forwards, ſeems to recoil and get upon what is called Yu tſi, which is the extremity by which the firſt and largeſt bone of the thumb is joined to the wriſt.

Beſides, there is the pulſe Fou, turning back; that

is when the blood, inſtead of paſſing freely the uſual way by the joint of the wriſt and Cubitus, returns as it were backward, and renders the pulſe ſlippery at the extremity of the Cubitus.

Directions for the proper feeling of the Pulſe.

THE TEXT.

He muſt be in a calm ſituation of mind and body who feels the pulſe; if the patient be a woman, he takes the right hand, if a man, the left.

REMARK.

Several phyſicians feel the pulſes of men at both hands.

THE TEXT.

He firſt places the middle finger exactly upon the joint of the wriſt with the Cubitus, then the two next fingers, one on each ſide: He muſt preſs very gently at firſt, then a little harder, and then very hard; but he muſt be ſure that his fingers are adjuſted as they ſhould be, after which he may proceed to examine the pulſe in the three places appointed, laying it down for a rule, that when the pulſe is regular there are four beats in the time of an inſpiration and expiration, or five at moſt.

He muſt likewiſe remember what ought to be the natural and healthy ſituation of the capital pulſes, viz. The pulſe of the ſtomach, the pulſe of the ſeaſon, and the pulſe proper to each of the five Tſang, and the ſix Fou, to paſs the examination of the pulſe of the diſtemper.

The three pulſes of each arm naturally incline to the long tremulous in all the ſpring-ſeaſon: In the ſummer they incline to the overflowing: During the autumn they incline to the ſuperficial, and in the winter to the deep.

The pulſe at the end of every ſeaſon, commonly called the pulſe of the ſtomach, is a pulſe of an equal and moderate ſlowneſs, and is perceived by a moderate preſſure.

The following are the natural and healthy pulſes of every one of the Tſang, and every one of the Fou; that of the heart ſuperficial, ſtrong and ſpreading; that of the lungs ſuperficial, ſharp, and ſhort; that of the liver long, tremulous, but equal enough; that of the ſtomach moderately ſlow, ſtrong, and hard; that of the kidneys deep, ſoft, and ſlippery: Theſe are the natural properties of theſe pulſes.

It is a ſure ſign of health when they are found in this ſtate, and in a juſt temperament; but if there be any exceſs or defect it is a diſtemper.

It is an outward diſtemper when there is an exceſs found, and the pulſe beats with violence and plenitude; and it is inward when it is a defect, and the pulſe becomes as it were empty and ſmall.

REMARK.

Neither the text nor the commentator determine what we are to underſtand in this place by outward and inward; I thought it neceſſary to take notice of it here, becauſe it will afterwards be mentioned again.

THE TEXT.

The finger need not be applied many times, when

the patient has a long wriſt; but when he has a ſhort one, there muſt be ſeveral trials, very near each other.

Every time the finger is applied there are three manners of diſtinguiſhing it; for the preſſure is very gentle, or very ſtrong, or between both: In all theſe circumſtances examine the nature of the pulſe in order to diſcover the ſeat of the diſtemper.

We muſt alſo examine in the pulſe what is called aſcending, deſcending, coming, retiring, beating, ceaſing: The pulſe is called aſcending, when it goes from the extremity of the Cubitus to the wriſt; from the wriſt to the Cubitus is called deſcending: In the firſt Yn produces Yang, and in the ſecond Yang produces Yn.

REMARK.

I have tranſlated this place literally, but I muſt own I cannot thoroughly underſtand it.

THE TEXT.

To proceed as it were from between the bone and the fleſh to the ſkin, is called Coming; from the ſkin to return between the bone and the fleſh, is called Withdrawing: In ſhort to make itſelf felt, is called beating; not to make itſelf felt, is called ceaſing.

Beſides, it is neceſſary to have reſpect to what is called Piao, the outſide, which is ſenſible; and Li, the inſide, which is leſs ſenſible; to what is called Hiu, inanition; and Che, repletion.

That which is called Piao, the outſide, or moſt ſenſible, is Yang, with reference to what is called Li, the inſide, or leſs ſenſible; ſuch are the ſix Feou, for inſtance, with reſpect to the five Tſang.

Every alteration and irregularity in the veſſels, and

in the carnous parts, without affecting the ſtomach one of the ſix Fou, or the Tſang, is likewiſe reduced to what we call Piao, an outward diſeaſe, and more apparent and more ſenſible.

But the irregularity of the ſpirits cauſed by the ſeven paſſions, which are, as it were, concentred in the heart, and the belly, without being able to ſurmount and appeaſe them, as well as all the diſtempers cauſed by the quantity or quality of the elements which abide in the Fou, and the Tſang, without being well evacuated by the ordinary ways; all this is reduced to what is called Li, the interior, that which is leſs apparent and leſs ſenſible.

That which is called, [Hiu] inanition, is when the vital and primogenial ſpirits being, as it were, entirely diſſipated, no ſtrength remains.

That which is called, [Che] Repletion, is not the vigour and abundance of the vital and primogenial ſpirits; ſo far from that, that it is the abundance of peccant humours, which overpower the ſpirits.

Thus in what is called, [Hiu] Inanition, there muſt be an endeavour to reſtore the ſpirits, and in what is called, [Che] Repletion, there muſt be an attempt to evacuate whatever is hurtful, and occaſions the diſorder.

It is neceſſary to have judgment in feeling the pulſe; the uſual rule is to preſs but little, when regard is had to the ſix Fou, and to preſs much harder in the examination of what relates to the five Tſang: According to this rule, taken rigorouſly, the pulſes Yang have all relation to the five Tſang.

REMARK.

By Yang is to be underſtood here the exterior, ſuperficial, ſenſible; and by Yn the deep, concealed, and leſs ſenſible.

THE TEXT.

But in this, as in almoſt all the reſt, there is often in the Yn a little of the Yang, and in the Yang a little of the Yn: There are pulſes Feou, ſuperficial, high, ſenſible, which have relation to the Tſang; and there are Tchin, deep, concealed, leſs ſenſible, which have relation to the Fou: For this reaſon it is neceſſary to proceed with a great deal of judgment.

Prognoſticks by the Pulſe in various Diſeaſes.

In hot, malignant and contagious diſtempers, when the patient perceives a burning drought, accompanied with anxiety, and violent, but irregular motions, if the pulſe is [Feou ta] ſuperficial and ſtrong, it is a good ſign, and the patient is like to get over it.

If it happens that he is delirious, has a diarrhœa, and the pulſe is [Hiu ſiao] empty, and ſmall, it is a ſign of death.

In ſwellings of the belly the pulſe ſuperficial and ſtrong is good, but if empty and ſmall it portends death.

In malignant fevers, either proceeding from heat or cold, the pulſe overflowing and ſtrong is good; the deep and ſlender is mortal.

In the diſtemper [Siao ko] immoderate hunger and thirſt, the pulſe hurrying and ſtrong is good, but empty and ſmall, mortal.

In Hemorrhagies of the noſe the pulſe deep and ſlender is good, but ſuperficial and ſtrong is mortal.

In ſhortneſs of breath the pulſe ſuperficial and ſlippery is good, but ſhort and ſharp is mortal.

In diarrhœas and dyſenteries the pulſe ſmall is good, but ſuperficial and overflowing is mortal.

In aqueous dropſies the pulſe ſuperficial and overflowing is good, but deep and ſlender is mortal.

In cardialgias the pulſe deep and ſlender is good, but ſuperficial and ſtrong is mortal.

In ſuperficial ſwellings, perhaps ſuch are meant that are cauſed by the air or intercutory wind, the pulſe ſuperficial and clean [Feou Tſin] is good, but ſmall and ſlender is mortal.

In ſpitting of blood the pulſe deep and weak is good, but full and ſtrong is bad.

In vomiting of blood the pulſe deep and ſlender is good, but ſuperficial, overflowing, full and ſtrong is bad.

In a cough the pulſe ſuperficial and flabby is good, but deep, and flying low, is bad.

In a woman, newly brought to bed, the pulſe moderately ſlow and ſlippery is good, but very tremulous and hurrying is mortal.

In internal repletions the pulſe overflowing and full is good, but deep and ſlender is bad.

In diarrhœas and obſtinate fluxes the pulſe ſmall and ſlender is good, but ſuperficial and overflowing is mortal.

In exceſſive ſweats the pulſe empty and ſmall is good, but tremulous, confined and haſty is bad.

In hot indiſpoſitions after child-bearing the pulſe moderately ſlow and ſlippery is good, but tremulous and quick is mortal.

When a perſon is internally exhauſted the pulſe deep

and ſlender is good, but overflowing and ſtrong is bad.

When a perſon is exhauſted both inwardly and outwardly, at the ſame time, the pulſe full and ſlippery is good, but deep and ſlender is bad.

In the Diſtemper called Ho loan.

[It is a violent cholick, greatly reſembling that which is called in the Eaſt-Indies, Modechin] the pulſe ſuperficial and overflowing is good, but ſlender and ſlow is mortal.

In wounds by ſteel the pulſe ſmall and ſlender is good, but confined and quick is mortal.

In a conſumption of the lungs the pulſe ſuperficial and ſlippery is good, but confined and ſtrong is mortal.

In a ſudden apoplexy the pulſe tremulous, ſhort and ſlender is good, but ſuperficial and ſtrong is mortal.

In conſiderable obſtructions of the inteſtines the pulſe ſlippery and ſtrong is good, but ſhort and ſlender is bad.

You may judge, by an examination of the three pulſes of each arm, if the diſeaſe proceeds from inanition, or a defect of the ſpirits and blood, or if it ariſes from a plenitude of the peccant humours; and if it reſides in what is called Piao, the upper part, the outſide, (the ſkin, the veſſels, the muſcles) or if it lies in what is called the interior (the noble parts, &c.)

In this examination there is no uſe made but of the diſtinction of two ſorts of pulſes, the ſuperficial and the deep: The firſt will anſwer to what is called Piao, the ſecond to what is called Li: They make the pulſe of the wriſt to preſide over the region of the heart and lungs as ſuperior; the pulſe of the joint over the region of the liver and ſtomach; the pulſe of the extremi-

ty of the Cubitus over the region of the kidneys, inteſtines, as well great as ſmall, &c.

According to this method they then explain what parts are ſubject to the pulſe of the wriſt of the left arm.

When the diſtemper proceeds from Hiu, (this word has been explained above) and it reſides in what is called Piao, the outſide, the pulſe of the wriſt at the left arm is ſuperficial, but without ſtrength; the ſkin has not its natural conſiſtence, the perſon has involuntary ſweats, is fearful of the wind and air, and is very ſenſible of cold.

On the contrary if the diſtemper comes from [Che] a bad repletion in what is called Piao, the outſide, the pulſe of the left wriſt is outwardly ſuperficial, but at the ſame time ſtrong; there are pains in the head, and heat throughout the body, and ſometimes the mouth is dry.

When the diſtemper ariſes from inanition, [Hiu] and reſides in what is called Li, the inſide, the pulſe of the left wriſt is deep and weak, attended with unreaſonable fears, panic terrors, loſs of memory, trouble of mind, want of ſleep, and a diſlike to hear any body ſpeak.

If on the contrary the diſtemper ariſes from [Che] a bad repletion, and reſides in what is called Li, the inſide, the ſame pulſe of the left wriſt is likewiſe deep, but it is ſtrong at the ſame time: Then there is anxiety, agitations, fretfulneſs, internal heat, madneſs, raving, an averſion to every thing that is hot, thirſt.

According to the ſame method they explain what relates to the pulſe of the joint of the left wriſt.

When the diſtemper proceeds from inanition, [Hiu] and reſides in what is called Piao, the outſide, the pulſe

of the left joint is ſuperficial but weak; the eyes have a wild look, and the ſight is diſturbed.

If the diſtemper comes from [Che] a bad repletion, and reſides in what is called Piao, the outſide, the pulſe is likewiſe ſuperficial, but then it is ſtrong: The patient perceives a pain in the hypochondria, with a tenſion of the belly, the eyes are ſwelled and diſordered.

When the diſtemper ariſes from [Hiu] inanition, and reſides in what is called Li, the inſide, the pulſe of the left joint is deep and without ſtrength, the patient is fearful and ſuſpicious, and his complexion turns yellow.

If the diſtemper comes from [Che] a bad repletion, and reſides in what is called Li, the inſide, the ſame pulſe is ſtill deep, but it has ſtrength withal: Such people have abundance of groſs, viſcous humour, are ſubject to fall into a paſſion, have contractions of the nerves, with pains in the groin, and in the ſcrotum.

According to the ſame method they explain that which relates to the extremity of the left Cubitus.

When the diſtemper proceeds from inanition, [Hiu] and reſides in what is called Piao, the outſide, the pulſe of the extremity of the left Cubitus is ſuperficial, but without ſtrength; there are ſpontaneous and malignant ſweats, deafneſs, a painful weight in the bladder, and an extraordinary contraction of the urethra.

If the diſtemper comes from [Che] a bad repletion, and reſides in what is called Piao, the outſide, the ſame pulſe is ſtill ſuperficial, but at the ſame time it is likewiſe ſtrong: Then there is a diſury or difficulty of making water, a pain in the urethra, and the urine is red and thick.

When the diſtemper comes from inanition, [Hiu] and reſides in what is called Li, the inſide, the ſame

pulſe of the left Cubitus is [Tchin] deep, and without ſtrength; the kidneys want ſpirits, cold is predominant; there is a gout or a painful rheumatiſm, eſpecially in the region of the loins, and in the knees, with a pain at the ſcrotum.

REMARK.

They have not mentioned here the caſe of a diſeaſe proceeding from [Che] and reſident in what is called Li, the inſide; I believe that in the copy from which this book was printed the writer had omitted a line.

THE TEXT.

According to the ſame method they explain what relates to the pulſe of the right wriſt.

When the diſeaſe comes from inanition, and reſides in what is called Piao, the outſide, the pulſe of the right wriſt is ſuperficial, but without ſtrength: There are ſpontaneous ſweats, a dread of cold and wind, the back eſpecially is ſenſible of cold, there is an itching in the ſkin, and the noſe runs very much.

If the diſtemper comes from [Che] a bad repletion, and reſides in what is called Piao, the outſide, the ſame pulſe of the right wriſt is ſtill ſuperficial, but it is likewiſe ſtrong: The patient perceives a great heat throughout the body; there is a great pain in the head, attended with a ſtupor, and every thing ſeems to turn round.

When the diſtemper proceeds from inanition, [Hiu] and reſides in what is called Li, the inſide, the pulſe of the right wriſt is deep and without ſtrength.

If the diſtemper comes from [Che] repletion, and reſides in what is called Li, the inſide, the ſame pulſe

of the wriſt is likewiſe deep, but it is likewiſe ſtrong: The peccant humours abound in the Viſcera; there are frequent fits of coughing, a great deal of phlegm that cannot be brought up, a ſhortneſs of breath and oppreſſion.

According to the ſame method they explain what relates to the pulſe of the joint of the right wriſt.

When the diſeaſe comes from inanition [Hiu,] and reſides in what is called Piao, the outſide, the pulſe of the joint of the right wriſt is ſuperficial, but without ſtrength: The patient can neither move his arms nor legs, has a ſpontaneous laſſitude, and is exceeding ſleepy; ſometimes the face and eyes are ſwelled.

If the diſtemper comes from [Che,] a bad repletion, and reſides in what is called Piao, the outſide, the ſame pulſe is likewiſe ſuperficial, but it has ſtrength withal: The belly is ſwelled, and there is a great oppreſſion in the breaſt and diaphragm.

When the diſtemper ariſes from inanition [Hiu,] and reſides in what is called Li, the inſide, the pulſe of the joint of the right wriſt is deep, and without ſtrength; there is an emptineſs in the kidneys, they not performing their functions as they ought, and ſecreting but little urine; ſometimes an enormous weight in the region of the loins; ſometimes a ſharp pain, and the patient is not able to turn himſelf about.

If the diſtemper comes from [Che,] a bad repletion, and reſides in what is called Li, the inſide, the ſame pulſe is ſtill deep, but it has likewiſe ſtrength; the patient cannot bear cold, there is a pain in the ſcrotum, which extends even to the loins, and ſometimes the lientery.

Remark.

There ſeems to be ſomething wanting here, for there is nothing ſaid that relates to the pulſe of the extremity of the right Cubitus.

The Pulſes of the ſeven Paſſions or Affections of the Mind.

In joy the pulſe is moderately ſlow; in compaſſion it is ſhort; in ſadneſs it is ſharp or rough; in anxiety it is in diſorder; in fear it is deep; in a ſudden fright it is in a flutter; in anger it is confined and in a hurry.

The Difference of the Pulſes according to the Sex.

In a man the pulſe of the wriſt ſhould always be more ſtrong than that of the Cubitus; if the contrary happens it is unnatural, and indicates a defect in the kidneys.

On the contrary the pulſe of a woman at the Cubitus ought always to be more ſtrong than that of the wriſt; if it happens otherwiſe it is unnatural, and this indicates a defect in the Tſiao, the ſuperior ſtove or fire-place.

The Difference of the Pulſes according to different Ages.

In an old man the pulſe is naturally pretty ſlow and feeble; if the contrary happens it is a diſeaſe: In the bloom of age the pulſe is naturally hard and full; if the contrary happens it is a diſeaſe: However, with relation to this, there are two obſervations to be made.

1. There are ſome old men whoſe pulſe is ſtrong and pretty quick, but at the ſame time hard, and not friſking: It is a natural pulſe that indicates the robuſt conſtitution they are bleſſed with: This pulſe is likewiſe called The pulſe of long life: But when the pulſe of an old man is ſtrong, and likewiſe at the ſame time friſking or ſkipping, and as it were diſturbed, all the ſtrength that remains to this man is outward; he has not much within, nor can he laſt much longer.

2. A man in the flower of his age ſometimes has a pulſe that is ſlow and ſlender, but in a manner gentle and equal, and pretty uniform in the three different places where it is uſually felt: This is not much amiſs; it is a natural pulſe and proper to perſons that have been brought up tenderly; but if in the flower of the age the pulſe is ſo fine and ſlender, that it ſeems to riſe up and grow hard by intervals; if it is not the ſame at the wriſt as at the extremity of the Cubitus, but very different, this pulſe is mortal.

There muſt be reſpect had to the Conſtitution and Stature.

In feeling the pulſe one ought to have regard to the ſtature and the corpulence of the ſubject, and its being naturally more dull or active; if the pulſe anſwers thereto it is good, but if otherwiſe it is bad.

REMARK.

Neither the text nor the commentary diſcover in what this correſpondence conſiſts.

THE TEXT.

The Complexion of the Patient ought to agree with the Pulſe.

If the complexion of the ſick perſon does not quadrate with the pulſe it is a bad ſign: But there is this obſervation to be made, That if the colour which according to its kind overpowers the pulſe oppoſite thereto, if the ſick perſon dies it will be ſuddenly; whereas if the pulſe, according to its kind, overpowers the complexion contrary thereto, if the ſick perſon dies it will be after he has lingred for ſome time.

But if the patient eſcapes there is this obſervation to be made, That if it is the pulſe which changes and ſubmits to the complexion, the cure will be ſpeedy: On the contrary it will be ſlow if the complexion changes and becomes agreeable to the pulſe while the pulſe continues the ſame; but when once the one and the other quadrate as they ought the danger is over.

When it is known in what noble Part the Diſeaſe lies, one may judge by the Patient's Pulſe when he will die.

When the diſtemper is in the liver the pulſe is commonly tremulous; but if this tremulouſneſs is hard, ſtrong and quick, like ſo many repeated ſtrokes of a blade when it is whetted at the place marked for the pulſe of the liver, the patient in this caſe will not live above a day: He will die the next day, betwixt three and ſeven in the evening.

REMARK.

This place is the joint of the Cubitus with the wriſt of the left arm. See the place where the pulſes proper to each of the entrails are mentioned.

THE TEXT.

In diſeaſes of the heart the pulſe proper to this viſcus is overflowing: If you find at the ſame time the ſkin leap, like the head of a drum when it is beating, knowing from other ſigns that the diſtemper is in the heart, you may be certain that the patient will die the next day between nine in the evening and one in the morning.

When the diſeaſe is in the ſtomach the pulſe generally proper to this viſcus is feeble: If beſides you find the motion like that of water falling drop by drop through a crack, or if without the leaſt friſking or ſkipping it is flabby, like a ſmall ſtream of water, the patient will die the next day between one and five in the morning.

When the diſeaſe is in the lungs the pulſe proper to this viſcus is generally ſharp and rough; but if you find it mixt with a certain ſlight ſhort motion, ſuch as is that of the feathers or hairs of animals when they are put in agitation by the wind, the patient will die the next day between nine in the morning and one in the afternoon.

When the diſeaſe is in the kidneys the pulſe generally belonging to theſe viſcera is hard; but if you find, over and above, that its motion imitates that of the beak of a bird in pecking, the ſick perſon will die the next day between nine and eleven in the morning,

or elſe between one and three in the afternoon, or between ſeven and nine in the evening, or between one and three in the morning.

If there are ſick perſons who, in ſuch like caſes, paſs the terms that are fixed, they are perſons whoſe ſtomach is naturally good, and are able to eat to the very laſt.

That aphoriſm ought to be rejected that ſays, any one of the five noble parts being deſtitute of ſpirits the perſon will die at the end of four years.

An ancient book ſays, that if in the pulſe of any perſon after forty ſucceſſive beats there is a failure of one, it is a ſign that one of the noble parts, called Tſang, is deſtitute of ſpirits, and death will follow four years afterwards, when the ſpring-ſeaſon ſhall ſend forth graſs and herbs.

Thoſe who ſince that time have treated of the pulſe unanimouſly ſay, that when the pulſe beats fifty times ſucceſſively, without ſtopping, the perſon is in perfect health, and his conſtitution is ſound: if after fifty ſucceſſive beats there is a failure of one it is ſign that one of the noble parts is deſtitute of ſpirits, and death will follow five years after: Alas! if every thing aſſerted in theſe books was to be credited ſeveral other things might be mentioned more ſtrange than theſe.

If the liver is able to perform its functions no longer, death will enſue in eight days; if it is the heart, a day will be the outſide; if the lungs one may ſurvive three days, and even to five if it be the ſtomach; if it be the kidneys, four days is the longeſt: This is aſſerted in books to which one may ſafely give credit.

But when we read that when one of the noble parts, Tſang, is deſtitute of ſpirits, death will not follow till four years after, and that in the ſpring-ſeaſon: This is not at all credible; common phyſicians and men of

ſmall underſtanding uſually adhere to books without any diſcernment, by which they deceive themſelves and impoſe upon the public; I know nothing more contemptible.

Remark.

I am not able to ſay to whom this ſcrap of criticiſm belongs, it is put into the text with the reſt, and conſequently is attributed to Ouang tchou ho, who is ſaid to be author of this book: The critic ſays, very properly, that we ought not to follow every thing that is aſſerted in books without diſtinction, not even the moſt ancient and moſt valued; and whether he has reaſon or no to adopt what he has adopted I ſhall not examine in this place.

I ſhall only obſerve that the refutation of the aphoriſm, which he rejects, ſuppoſes that the author of the ancient book has aſſerted that one may live four years, though one of the noble parts called Tſang was intirely deſtitute of ſpirits: This is to take it ſtrictly according to the rigor of the letter; it may be explained more favourably, and the author might only mean that the intermiſſion of one beat at the end of forty was a ſign that one of the noble parts, called Tſang, was in an ill ſtate, and ſcarcely admitted any ſpirits; inſomuch that proceeding ſtill, from bad to worſe, death will follow at the end of ſuch a number of years: But to ſay that this term ſhall be juſt four years, and no more, is being too particular; our critic has overlooked this circumſtance, for he himſelf is as exact in his determination, though for a much ſhorter time, as may be ſeen in the preceding article.

The Text.

There are occaſions, that regard being had to the cauſe and nature of the diſeaſe, will admit of a deviation from the common rules of the pulſe.

When the pulſe is externally ſuperficial, and eaſy to be felt when the finger is laid gently on it, it is uſual to preſcribe a ſweat; however there are occaſions in which, though the ſick perſon has ſuch a pulſe, it will be proper to procure an evacuation by ſtool.

Tchong king gives us an example; Though the pulſe be ſuperficial and high, ſays he, if the patient feels an oppreſſion at the region of the heart, and a heat in one of the noble parts, named Tſang, let an evacuation be procured by ſtool, and not by ſweat.

There are ſeveral other ſuch-like caſes, and it is a great error always to follow the common rules relating to the pulſe, without regarding the cauſe and nature of certain particular diſtempers.

There are alſo occaſions wherein, regard being had to the ſituation of the pulſe, there muſt be a deviation from the common rules laid down for ſome diſeaſes.

When the diſeaſe is external the common rule is to procure a ſweat; but ſometimes, according to the indication of the pulſe, this rule muſt be neglected: For inſtance, ſays Tchong king, in a pain of the head with heat, if you find that the pulſe is more deep than uſual, and the pain is in the head only, and not in any other part of the body, there muſt be proviſion made for the internal parts, there muſt be no ſweating medicine adminiſtred, but a potion called Su nhi, regard being had to the indication of the deep pulſe.

Likewiſe in internal diſeaſes the common method is to give catharticks: However when there is an in-

ternal heat which came on in the afternoon, and the pulſe is ſuperficial and empty at the ſame time, do not purge at all, but procure a ſweat, and for that purpoſe make uſe of the decoction of the tops of the tree Kouei.

Likewiſe, when there is a ſtoppage at the ſtomach, it is common to give a certain potion which, carrying the humours downward, opens the paſſages of the breaſt, and on this account is called a pectoral: However, though there be a ſtoppage in the ſtomach or breaſt, if the pulſe is high and ſuperficial, forbear purging, becauſe it will prove mortal.

Likewiſe, in certain wandring pains throughout the body, it is uſual to adminiſter a potion compoſed of Ma hoang, and the tops of the tree Kouei, by this means a ſweat is procured which commonly removes the pains: However, if in theſe pains you find the pulſe at the extremity of the Cubitus evidently ſlow, take heed of ſweating; take ſpecial heed to the indication of the pulſe, and endeavour to re-eſtabliſh the ſpirits and blood which are defective.

An important Obſervation relating to the Prognoſticks of malignant Fevers in the Winter.

Tchong king ſays, If the pulſe be ſuperficial, moveable, ſtrong, hurrying, ſlippery, it is Yang.

REMARK.

That is, it indicates heat, if not exceſſive, at leaſt that which is ſufficient.

THE TEXT.

A deep, ſharp, tremulous weak pulſe is Yn.

REMARK.

That is it indicates cold, or at leaſt a defect of heat.

THE TEXT.

If the cauſe of the diſtemper is Yn, and the pulſe is Yang, if the patient be taken proper care of he will not die: If the cauſe of the diſtemper is Yang, and the pulſe is Yn, he will certainly die.

This is the moſt important obſervation relating to the prognoſticks of malignant fevers in the winter, and whoever underſtands theſe few words knows more than half of the three hundred and ninety ſeven methods laid down by ſome for this purpoſe.

Of Women's Pulſes.

Women have generally a pretty full pulſe at the extremity of the Cubitus, but ſtronger in the right arm than in the left; and if you find in them the pulſe of the kidneys it is that of the extremity of the Cubitus, ſmall, ſharp, and ſuperficial withal; or if the pulſe of the liver, (it is the pulſe at the joint of the left wriſt) ſharp, hurrying, there is an obſtruction, and the catamenia are not regular: Likewiſe when the pulſe at the extremity of the Cubitus is ſlippery and interrupted, or ſmall and ſlow, the catamenia are not regular, they come but once in the ſpace of three months.

When a woman, who otherwiſe is in good health,

has a pulſe regularly ſuperficial or deep, as it ought to be in the three different places where it is uſually felt; in this caſe if the catamenia fail, it is only when ſhe is with child: Another ſign, likewiſe, is when the pulſe at the extremity of the Cubitus is high, and more vigorous than uſual.

If the pulſe at the extremity of the left Cubitus happens to be overflowing and high, or overflowing and full, ſhe is with child of a ſon: If at the extremity of the right Cubitus the pulſe is overflowing and high, or ſlippery, ſhe is with child of a daughter.

Others give another rule: When a woman is of a weak and tender conſtitution, if when the finger is preſſed hard upon the pulſe of the Cubitus the beats continue to be felt, and ſhe then has not her catamenia, it is becauſe ſhe is pregnant; the ſame thing may be ſaid of a woman whoſe catamenia ceaſe, and whoſe ſix pulſes are in their natural ſituation, for if it were otherwiſe ſhe would be ſickly.

This is the ſenſe of the ancient book concerning the pulſe, that when the pulſe is ſuperficial or deep, as it ought to be in the three different places of each arm, and when the finger is preſſed upon it the beats ſtill continue to be felt, the woman is with child, and there is no occaſion, in judging of it, to have recourſe to the difference of the pulſes, ſuch as overflowing, ſlippery, &c.

In the firſt months of being with child the pulſe of the wriſt is often ſmall, and that of the Cubitus quick; if in preſſing the finger upon it, it ſeems to diſperſe, ſhe is three months gone; but if when it is preſſed it does not diſperſe, but keeps its uſual conſiſtence, ſhe is five months gone.

When the catamenia ceaſe after a woman has conceived, if then the pulſe is long and tremulous her

fruit will not come to maturity, but a falſe conception will follow.

When in the ſeventh or eighth month of her pregnancy the pulſe is full, hard, and ſtrong, it is a good ſign; if it is deep and ſlender the woman will have a difficult time, and will die in childbed.

The ancient book of the pulſe ſays that when a woman with child, who is otherwiſe in good health, has a deep pulſe, but full in the left arm, ſhe is big with a ſon; when ſhe has a pulſe ſuperficial and high in the right arm, it is a daughter: If the pulſe is deep, but full in both arms, ſhe is pregnant with two boys: If the pulſe is ſuperficial and high in both arms, ſhe is with two girls: The ancient book of the pulſe ſtops here.

Some of the moderns have preſcribed rules to diſcover if a woman is big with three boys or three girls, or with a boy and a girl: if in obſerving this rule, they ſometimes happen to be right, it is mere accident; but for my part I never follow ſuch abſurd whimſies.

Remark.

Ouang chou ho, who lived under Tſin chi hoang, that famous burner of books, makes mention here of ſeveral treatiſes of the pulſe, which at the ſame time he diſtinguiſhed into antient and modern: at preſent Ouang chou ho is himſelf the moſt ancient author that we have upon this ſubject.

If a woman generally has the pulſe at the extremity of the Cubitus, ſmall, weak and ſharp, the abdomen is generally cold, and ſubject to violent ſhiverings, tho' he be ever ſo young, and ſhe may be certain ſhe will never have a ſon; but ſhe will have neither ſon nor daughter, if ſhe is advanced in years.

Of the Pulſe of the Heart.

A juſt diſcernment and a cloſe attention are neceſſary in the examination of the pulſe, with regard to the heart. If the heart is attacked, and the diſtemper proceeds from a bad repletion of peccant humours, the patient is troubled with frightful imaginations, and diſturbed with monſtrous and dreadful figures: if the diſtemper proceeds from inanition, the patient raves of ſmoke, fire, light, and ſuch-like things.

When the pulſe is quick in the three places where it is commonly felt, (it is only the left arm that is here treated of) the heat is extraordinary in the heart; in this caſe there generally ariſe little ulcers on the tongue, and chops on the lips: the patient utters idle things, ſees ſpirits, and, if he was not prevented would drink conſtantly.

When the pulſe of the heart is Kong, that is when it feels like a hole in a flute, having two ſenſible extremities, and a void place in the middle, there is a loſs of blood either by vomiting or urine, and frequently by both.

When the pulſe of the wriſt of the left hand, called otherwiſe the pulſe of the heart, being thus, flows back, if I may ſo ſpeak, upon the joint, the whole body is full of pain which ſeems to pierce to the very bone: the heart perceives a parching heat, cauſing great anxiety, and the head, eſpecially the face, is all in a flame.

When the pulſe of the heart is high and full, it is ſtill a ſign of extraordinary heat; the fire with-held and as it were embarraſſed, produces wind: theſe are the parching vapours which occaſion pain and anxiety, and

communicate to the face the proper colour of the heart.

There is a defect of heat, and a kind of inanition, when the pulſe of the heart is ſmall, the patient being then ſubject to panick fears, and alternatives of heat and ſhivering: if the pulſe is in a hurry, the entrails are pained, and there is a ſuppreſſion of urine.

If at the ſame time it be full and high, and more ſlippery, there is terror, diſorder in the tongue, and difficulty of ſpeaking; if only ſlippery it is a ſign only of ſimple heat, which has nothing very morbifick; but if it is ſharp, there is wanting at the heart a proper degree of ſtrength; then there is likewiſe a difficulty of ſpeaking.

If the pulſe of the heart is deep and confined a cold humour is the occaſion of the diſorder, whence proceeds a Cardialgia; but if the pulſe is tremulous, there enſues a palpitation, and a canine appetite.

When the patient has an inflamed viſage, an anxious heart affecting to laugh much, there is an exceſſive heat in the palms of the hands, and a great dryneſs in the mouth; the pulſe likewiſe agreeable to this ſtate is a pulſe confined, full, and inclinable to be quick; if on the contrary it is deep and flabby, the diſeaſe is very difficult to heal.

Of the Pulſe of the Liver.

REMARK.

The pulſe proper to the liver is the pulſe at the joint of the left wriſt, as we mentioned at the beginning.

The Text.

The pulſe of the liver in its uſual and healthy condition is long and tremulous; when it is ſuperficial and ſhort the liver undergoes an alteration, and one is ſubject to emotions of anger.

When the pulſe of the liver is full one dreams of mountains, trees and foreſts; when it is empty one dreams of herbs and buſhes.

The diſtemper, called Fei ki, proceeds from an obſtruction of the liver; it is a ſenſible ſwelling lying under the ribs.

Explanation.

This tumour generally happens in the ſpring: this diſtemper commonly has its riſe in the lungs; but the liver not being able to get rid of the vitiated humour that it receives, collects it together and forms a tumour; whence often proceeds a troubleſome cough, and a quartan ague of a long continuance.

The Text.

When the pulſe is long and tremulous in the three places of the left arm, where it is uſually felt, the liver is not then in a natural ſtate, but is faulty through exceſs; upon which is generally felt a pain in the eyes, and large tears are ſhed by intervals: the patient is fretful, eaſily provoked, and very ſubject to be clamorous.

If the pulſe of the liver, being ſoft, inclines never ſo little to long tremulouſneſs, it preſages nothing amiſs; but if it inclines to the ſhort tremulous,

there is an alteration in the liver, but not conſiderable.

If the pulſe of the liver, being ſuperficial and ſtrong, is at the ſame time full, the alteration of the liver is conſiderable; then generally the eyes are red and full of pain, the patient does not ſee clear, but imagines his eyes are covered with ſomething that prevents his ſeeing.

When the pulſe of the liver is, as it were, empty in the middle, having two ſenſible extremities like the hole of a flute, the ſight becomes dim, the patient ſometimes vomits blood, and the arms and the legs loſe their motion.

If the pulſe of the liver is ſharp or rough there is a waſting of this viſcus, and a ſolution of the blood; the ſides are commonly puffed up or ſwelled, and the ſwelling is perceived as far as the armpits.

If the pulſe of the liver is ſlippery the liver is too hot, and this heat communicates itſelf to the head, particularly to the eyes.

The indication is quite otherwiſe when the pulſe is either ſhort and tremulous, or full, or long and tremulous, or deep; then there is an obſtruction, and a ſwelling to be feared: When the pulſe is ſmall, weak, ſuperficial, and as it were diſperſed, either there is a failure of the ſpirits, or they have not a free courſe; then the ſight fails, they ſee, as they commonly ſay, ſtars, and they are ſcarce able to diſtinguiſh any thing exactly.

When the pulſe is ſuperficial to the laſt degree the whole body is feeble, and there is a danger of a palſy.

In ſhort, in diſtempers of the liver the face has generally a blueiſh caſt, there is weakneſs or pain in the joints, the patient has an angry look, the eyes are often ſhut, as if unwilling to ſee any perſon whatever.

If the pulſe of the liver is quick, and likewiſe long and tremulous, there is ſtill ſome hope of a cure; but

if when it changes it becomes ſuperficial, and at the ſame time ſhort and ſharp, the diſtemper is then incurable.

Of the Pulſe of the Stomach Pi.

When the ſtomach is ſound the pulſe proper to this viſcus is moderately ſlow. [It is the pulſe at the wriſt of the right hand.]

Remark.

The Chineſe diſtinguiſh the orifice of the ſtomach from the ſtomach itſelf; they call the firſt Pi, and the ſecond Ouei; there is nothing to be ſaid to this, but they reckon the firſt among the five Tſang, and the ſecond one of the ſix Fou.

This appears contrary to reaſon, eſpecially if we adhere to the interpretation of ſome of the moderns, who explain the firſt character by another which ſignifies to retain, to ſhut up; and the ſecond character by another which, according to the ſame interpreters, ſignifies gate, paſſage; for it is plain that the ſtomach may be ſaid more properly to retain the aliments than the ſuperior orifice.

Thus, according to this interpretation, there is reaſon to place the ſtomach among the five Tſang, and the orifice among the ſix Fou; but let this be as it will, the phyſicians in their practice and uſual way of ſpeaking almoſt always join the Pi and Ouei.

The Text.

If the motion of the pulſe of the ſtomach reſembles that of liquor ſwallowed without interruption, the ſtomach has loſt its ſound and natural conſtitution.

This may proceed from two different cauſes, either fullneſs, upon which they dream of muſick and diverſions; or inanition, when they dream of feaſts.

The ſtomach dreads moiſture very much, and when it ſuffers by that there is heard a motion in this viſcus, and in the inteſtines, and there enſues one of the five fluxes.

EXPLANATION.

The five fluxes are the flux of the ſtomach, the flux of its orifice, the flux of the large inteſtines, the flux of the ſmall inteſtines, the flux called Ta kia: in the firſt the aliments are not digeſted; in the ſecond there is a tenſion of the belly, in conſequence whereof the aliments taken in are returned by the mouth; in the third there is a motion and pain in the entrails, and the ſtools are of a white colour; in the fourth there is likewiſe pain in the entrails, but not violent; there comes away blood, and ſometimes a purulent matter with the urine; in the fifth there is a ſtrong motion to go to ſtool, and the patient goes ſeveral times to no purpoſe.

REMARK.

This laſt is called a Teneſmus in Europe: the commentator calls it Ta kia, a name the origin of which I am unacquainted with: the phyſicians of the preſent age generally term it Ge tchang, a name which ſhews that they aſcribe this diſtemper to too great a heat of the inteſtines.

THE TEXT.

The ſtomach is ſubject to a diſtemper called Pi ki;

it uſually begins in the winter, and it is a defluxion like to a tumour: this diſtemper, if it be laſting, is followed with a jaundice, and a general falling away of the whole body.

EXPLANATION.

This ſwelling anſwers to the pit of the ſtomach, and appears there oftentimes of the bigneſs of a ſmall plate turned upſide down.

REMARK.

There are ſmall plates in China not above three inches in diameter.

THE TEXT.

If the moderate ſlowneſs which agrees to the pulſe of the right wriſt, proper to the ſtomach, is like that of the joint at the extremity of the Cubitus of the ſame right arm, and at the ſame time the ſtomach ſuffers from exceſs of heat, the mouth then has an ill ſmell, the patient is ſubject to troubleſome Nauſeas, but never vomits; the gums are eaten away, the teeth are left bare, the hair turns dark, cold and heat often ſucceed by turns, and the ſtrength continually decays.

If the pulſe proper to the ſtomach is full, and at the ſame time ſuperficial, the digeſtion is not good; the mouth is generally dry, and tho' the patient eats and drinks never ſo much he is ſtill weak, and ſeems to be empty: but if this pulſe is only full there is too much heat in the ſtomach, from whence proceed vapours that produce a ſtinking breath.

If this pulſe is ſharp it is to no purpoſe to eat, for

it does no good, nor does it ever cauſe the perſon to thrive.

If the pulſe is ſhort and tremulous there is a pain at the ſtomach, and dolorous ſhrinkings at the joints; the patient is troubled with continual Nauſeas, and has a deſire to vomit, but cannot.

If this pulſe is long and tremulous there is an exceſſive heat in the liver, which renders imperfect and ſpoils the digeſtion of the ſtomach.

If the pulſe is extraordinary full the patient is troubled with inward pains and dreadful anxieties, as if he were poſſeſſed with a demon: but you ought not on this account to have recourſe to conjurers and their tricks to diſpoſſeſs him.

EXPLANATION.

Extinguiſh, by an evacuation, the too great heat of the heart, and the diſeaſe will diſappear of itſelf.

THE TEXT.

In certain diſeaſes of the ſtomach, which are pretty often accompanied with pains at the joints, wherein the countenance becomes yellow, and the body heavy, there is an indigeſtion and a diarrhœa: As troubleſome as this condition is, if the pulſe be deep, moderately ſlow, ſlender, fine and ſmall, there is hopes of recovery; but if it is ſhort, tremulous and ſtrong, death is unavoidable.

Of the Pulſe of the Lungs.

As the ſmall inteſtines ſympathiſe with the heart, in like manner the large ſympathiſe with the lungs;

to ſpeak too much and drink too much wine, are hurtful to the lungs; too much ſpeaking often cauſes a cough, and drinking too freely does the ſame, whence the face is puffed up or ſwelled, and even ſometimes is full of pimples.

There is a diſtemper of the lungs called Sië puen; it begins in the ſpring, and is commonly perceived near the right armpit.

EXPLANATION.

It is a defluxion which forms a ſwelling at the place mentioned in the text; this tumour ſometimes appears as large as a ſmall cup turned upſide down.

REMARK.

Thoſe cups which are uſed in China to drink wine in are very ſmall.

EXPLANATION.

The origin of this diſtemper is a bad ſort of blood ſent from the heart: the lungs make an effort to throw it off either to the liver, or back to the heart; but if the lungs, being weaker than theſe two Viſcera, cannot get rid of it, there ariſes an obſtruction and a ſwelling; if nature or medicines do not quickly diſperſe it, it will be followed by a fever, which will be hot and cold by fits; and this will be attended with an ulcer of the lungs.

THE TEXT.

When the lungs are ſound the pulſe proper to this

Viſcus [which is that at the joint of the right wriſt] is ſuperficial, ſharp and ſhort; when it is ſtrong, overflowing, long and tremulous, the lungs are not then perfectly ſound; if it is diſordered by a bad repletion the patient dreams of arms, ſoldiers, guards and centinels; if it is by inanition he dreams of marſhy lands and difficult roads.

If at the three places of the right arm, where it is uſually felt, it is found to be ſuperficial, the lungs have ſuffered, and do ſuffer from the air or wind; hence proceeds running at the noſe, viſcuous ſpittle mixt at length with Pus; then the patient is afraid of cold, keeps himſelf as warm as poſſible, feels a ſuperficial pain almoſt throughout the body, but eſpecially a dry tenſion of the forehead, and a painful white in the eyes, from whence proceed tears by fits.

When the pulſe proper to the lungs is at the ſame time ſuperficial and full, the throat becomes dry, and is ſometimes inflamed; the body is bound, and the ſtools are ſharp, the noſe generally loſing the ſenſe of ſmelling.

But if this pulſe is at the ſame time full and ſlippery, then the ſkin and the hair ſhrink and become withered; the eyes are full of tears, the ſpittle viſcous, the throat dry and diſpoſed to be inflamed: All this is increaſed in the autumn, if there is not care taken in the ſummer; for this purpoſe bleeding is proper.

REMARK.

The text ſays that [Pien] a ſharp ſtone is proper; and the commentator, enlarging a little upon the text, ſays in ſuch a caſe it is neceſſary in the ſummer to uſe a ſharp ſtone to evacuate what the heart has too much of, that is the exceſſive heat that it has; for according

to what is ſaid elſewhere the heart, among the five Tſang, anſwers to fire among the five elements.

From this place alone it is clear that bloodletting was known to the Chineſe a long time ago, as a means to prevent the bad conſequences of an exceſs of heat, and it is actually uſed in China very frequently for horſes and aſſes.

With reſpect to men it is frequently practiſed, but commonly in a manner which can have no great effect, the orifice is ſo ſmall, and the quantity of blood taken away is ſo little; generally ſpeaking it is but the third of a porringer, and ſometimes leſs; it muſt likewiſe be owned that the frugality of the Chineſe, and the ſlightneſs of their nouriſhment, makes this remedy leſs neceſſary than in Europe.

However there are occaſions wherein the Chineſe look upon it as the only remedy, and at the ſame time an infallible one: A man is ſometimes ſeized with a kind of a fit of the gravel, which cauſes inſupportable pains; he cries out aloud, but his voice is ſoon interrupted by the violence of the diſtemper, the eyes are diſtorted, the viſage becomes livid, the extreme parts are cold, and the patient is almoſt at his laſt gaſp.

The Chineſe commonly attribute this diſeaſe to the gravel, without determining where it reſides: A chriſtian of the age of twenty-five was one evening ſeized with this diſtemper; they could not come to give me notice of the danger he was in, becauſe his houſe was in the ſuburbs, and the gates of the city were ſhut: every one ſaid, when they ſaw the patient, that his diſtemper was the gravel, and that it was neceſſary to ſend for a perſon to bleed him; this perſon was neither phyſician nor ſurgeon, however, being ſent for he came, tied the patient's arm above the elbow, waſhed and rubbed the arm under the ligature, and then with a lancet,

made upon the ſpot with a bit of broken china, he opened the vein in the uſual place, that is at the bending of the arm; the blood ſpurted out very high, upon which the ligature was untied, and the blood ſuffered to run and ſtop of itſelf, and they did not ſo much as bind up the wound: I was informed that inſtead of binding up the orifice made by the lancet, they generally apply a grain of ſalt; the patient was cured, and the next day in the evening he came to the church.

I was curious to ſee the place where he was let blood, and I found it to be the ſame where it is generally done by the Europeans; the orifice was already almoſt entirely healed, being but very ſmall at firſt; the chriſtians aſſured me that the quantity of blood would fill two cups, ſuch as they uſually drink tea out of.

The Text.

If the pulſe proper to the lungs is deep, ſhort and tremulous, and inclinable to be ſlippery at the ſame time, it is a certain ſign of a cough.

Explanation.

This cough proceeds from cold.

The Text.

If the pulſe being ſmall, ſuperficial, and is at the ſame time as it were diſperſed, then the lungs are as they ought to be; it is in its natural and ſound ſtate.

Remark.

The commentator expreſſes the character of this pulſe, mixt with the three expreſſed in the text, by the compariſon of the motion which is made by a heap of feathers when it is blown upon by a ſmall wind.

The Text.

But if the pulſe proper to the lungs is at the ſame time ſuperficial and overflowing, the breaſt is oppreſſed with ſome defluxion, and there is at the ſame time a motion in the large inteſtines.

If the pulſe be long and tremulous the cold has cauſed ventoſities in the breaſt, which is commonly accompanied with a conſtipation.

If the pulſe ſeems to be empty in the middle, like a hole in a flute when the finger is laid upon it, there is a hemorrhagy, and diſſipation of the ſpirits.

If the pulſe is deep, ſlender, and inclinable to be ſlippery, the bones are as it were ſtewed in Balneo Mariæ; the ſkin and the hair become rough, and there is a ſucceſſion of heat and cold.

In ſhort when a man who has diſtempered lungs ſpits blood, or bleeds at the noſe, coughs violently by intervals, is melancholy and full of complaints; if the pulſe in ſuch a caſe is ſuperficial, and never ſo little ſharp, the ſign is not quite ſo bad, nor is the diſeaſe abſolutely incurable; but if it is overflowing, ſtrong, and bordering upon the hard, there is no poſſibility of a cure.

Of the Pulſe of the Kidneys.

If the pulſe proper to the kidneys be deep and ſlippery in the winter it is in its natural ſtate.

REMARK.

The pulſe at the extremity of the cubitus of the right arm has reference to the right kidney, and the ſame in the left arm to the left kidney: here the text ſpeaks of both confuſedly.

THE TEXT.

If the pulſe is ſuperficial and ſlow the kidneys are diſordered, and the cauſe of the diſtemper is in the ſtomach.

It happens thro' cold that ſome perſons are always ſpitting, and this draws off the humidity neceſſary for the kidneys, from whence enſues a troubleſome dryneſs.

There is a diſtemper called Puen tun, a kind of tumour or ſwelling which is perceived in the umbilical region, the cauſe whereof is an obſtruction, and which commonly ends in a univerſal palſy.

When the kidneys are in a diſeaſed ſtate, if it happens thro' repletion, there is perceived a weight in the region of the loins, eſpecially in the night when the perſon comes to lie down; if it is cauſed by inanition or weakneſs, the urine is apt to come away inſenſibly when the perſon is aſleep.

If at the three places where the pulſe is uſually felt it is found to be ſluggiſh, the kidneys are diſordered with cold, and there is heat and roughneſs in the ſkin;

the patient when aſleep often dreams that he is falling into the water, and when he is awake is thoughtful, anxious and melancholy.

If the pulſe proper to the kidneys ſeems to be diſperſed, or if the perſon makes water too often, or too plentifully, or if there is a ſimple gonorrhœa, then there is a pain in the region of the loins, and in the knees; there even ſometimes ariſe ſudden and cold ſweats without any apparent cauſe: In ſhort the pulſe above mentioned is ſo much the worſe, if it does not exactly indicate any of theſe diſtempers in particular.

If the pulſe proper to the kidneys is full and ſlippery, it is an infallible ſign of a dyſury or difficulty of making water; the urine is reddiſh and very hot.

If the pulſe be ſharp it is a ſign of a troubleſome gonorrhœa, the patient is ſubject to a thouſand extravagant dreams, eſpecially often imagining himſelf to be walking over great waters; beſides there frequently happens a ſwelling in the ſcrotum and the right teſticle.

If the pulſe is at the ſame time full and ſtrong there is a heat in the bladder, whence enſues a ſuppreſſion of urine, or at leaſt a difficulty of making water.

If the pulſe is at the ſame time ſlippery, tremulous and long, or elſe deep, ſhort and tremulous, in both theſe caſes there is a pain in the loins, and a ſwelling in the feet; but in theſe two caſes the cauſe of the pain is not entirely the ſame.

EXPLANATION.

In the firſt caſe the pain is cauſed by humid winds, but hot withal; in the ſecond caſe by cold winds.

THE TEXT.

When the pulſe proper to the kidneys is ſuperficial, ſhort and tremulous, the alteration in the kidneys is perceived in the ears, for they become deaf.

When the kidneys are ſo affected that the countenance becomes livid, and the cold ſeizes the legs and feet, the diſeaſe is very dangerous; however if the pulſe is then deep, ſlippery, and inclinable to be long and tremulous, the diſtemper is not incurable; but if the pulſe be then ſlow and ſtrong, there is little hope left.

General Obſervations on the Pulſe wherever it is felt.

1. In whatever arm and place the pulſe is felt there ought to be regard had to the ſeaſon.

2. The pulſe of a healthy perſon beats at leaſt forty five times ſucceſſively, without any inconſiderable intermiſſion.

3. When the pulſe is perceived under the fingers to be long and tremulous, or in a hurry, or overflowing, or ſhort and tremulous, one may judge in general that there is an exceſs of heat and ventoſities.

4. When the pulſe becomes deep and ſlender all of a ſudden, and as it were by ſtealth, the cauſe of the diſeaſe is cold, and it preys upon the ſpirits.

5. When the pulſe imitates the motion of water that falls drop by drop through a crack in the cieling, or the motion of a bird's beak when it pecks any thing, we may judge that the diſeaſe is incurable.

Obſervations on the Pulſe of the left Wriſt, which is proper to the Heart.

1. It is no very dangerous matter, if after forty-five uſual beats it alters or ceaſes, for a ſhort time only.

2. If it ſinks after thirty-one, and is very backward in returning to its firſt ſtate, if it be the ſpring-ſeaſon in which this happens, the patient will die the following ſummer; the ſame may be ſaid in proportion with regard to the other ſeaſons.

Obſervations upon the Pulſe of the Joint of the left Wriſt, the Pulſe proper to the Liver.

1. If the pulſe beats fifty times in the uſual manner, or at leaſt forty five times, without any remarkable interruption, nothing ails the liver.

2. There are violent heats and ventoſities in the liver, if after twenty-ſix beats it ſinks and becomes deep, but ſoon returns to its former ſtate.

3. If it becomes ſharp, and ſeems to conceal itſelf, after twenty-nine proper beats, there is a great obſtruction, and the liver is in a bad ſtate; the joints of the body are affected with it, and it commonly proceeds from bad to worſe till it ends in death.

4. If it ſinks, riſes, then ſinks again, after nineteen beats, the liver is quite ſpoiled, and is unable to perform its functions; in which caſe all human aid is vain.

Obſervations upon the Pulſe of the Extremity of the left Cubitus, the Pulſe proper to the left Kidney.

1. The kidney is ſound if there be forty-five proper beats without intermiſſion.

2. The kidney is hurt by wind or heat, if it ſeems to be in a hurry, or long and tremulous, when preſſed by the finger.

3. If it ſuddenly becomes very ſlow, the diſeaſe is extremely dangerous, and requires immediate aſſiſtance: cold is frequently the occaſion of this, and will require much trouble and expence to get rid of it.

4. The kidneys are depraved, and unable to perform their functions, if after twenty-five proper beats it ſinks; all the phyſician's ſkill will not be able to ſave the patient, and the moſt that can be expected is a reprieve, which cannot be of long duration.

Obſervations upon the Pulſe of the right Wriſt, which is proper to the Lungs.

1. If there are forty-five proper beats without intermiſſion, the lungs are ſound.

2. If this pulſe is in a great hurry, the external air has diſordered the lungs.

3. If when you continue to count the beats, and obſerve the pulſe, you find it becomes conſiderably ſlow after twenty beats, the lungs are void of the neceſſary degree of heat; do not look upon this as a trifling matter, but get a cure as ſoon as poſſible; without which you will find that the pulſe will ſink, and ſink again, and the feeble patient will in a ſhort time not be able to quit his bed, the lungs being unable to perform their function.

4. If it diſappears after twelve beats of the pulſe, or undergoes any remarkable change, the patient will ſoon be plagued with a troubleſome cough, accompanied or followed with ſpitting purulent matter; his ſtrength will fail, his hair decay, and he will not live long.

Obſervations on the Pulſe at the Joint of the right Wriſt, which is proper to the Stomach.

1. If the pulſe beats forty-five times in a proper manner, without intermiſſion, the ſtomach is ſound.

2. If the pulſe falls into a great hurry, the exceſs of heat in the ſtomach will diſturb the concoction of the food.

3. However, this viſcus generally ſuffers through defect of heat, which will appear from the extreme ſlowneſs of the pulſe.

There are nauſeas and vomitings when it is in this condition, which frequently happens, and the ſick perſon cannot live more than ten days.

Obſervations on the Pulſe at the extremity of the right Cubitus, which is proper to the right Kidney.

1. If during forty-five proper beats there happens no intermiſſion, this viſcus is ſound.

2. If it ſinks after nineteen healthy beats, then riſes and ſinks again, it is a certain ſign of death, very few eſcaping.

3. If this pulſe is ſtrong, hurrying, and inclinable to be tremulous, the viſcus is diſordered with ventoſities, which proper medicines will cure.

4. If the pulſe ſinks after ſeven agreeable beats, ri-

ſes and ſinks again, without riſing till ſome time after, the patient will not live long.

Obſervations upon the ſeven Pulſes called Piao, that is the external and more ſenſible in compariſon of the reſt.

Upon the Pulſe called [Feou] ſuperficial, and its various Indications.

1. The ſuperficial pulſe is that which when preſſed hard by the finger is not felt at all, or but very little, and which on the contrary is very ſenſible when gently preſſed.

2. In general when the pulſe is ſuperficial at times and places when it ſhould not be ſo, as has been already explained, there is either a cough or difficulty of breathing, or cold ſweats, or laſſitude and weight in the loins, or unquiet ſleep, or elſe a complication of all theſe ſymptoms.

3. When upon preſſing with the finger the pulſe becomes very little ſenſible, and then upon feeling exceeding lightly it becomes very ſenſible, and if upon repeating this twice the ſame thing happens exactly, then the blood is too hot, and yet the noble parts have not that degree of heat that they require. This muſt be cured by reſtoring the ſpirits, and reducing the heat and cold to a juſt temperature.

4. When the pulſe is ſuperficial both in the right and left wriſt, the patient is diſordered by the external ira, and there is pain and heat in the head.

5. If this pulſe is the ſame at the joints of the wriſt, the ſtomach is as it were exhauſted, and a ſwelling, or at leaſt a tenſion of the body enſues.

6. If it is the ſame at the extremity of the Cubitus,

the lungs have been hurt by the wind or air, whereupon there enſues dryneſs or roughneſs in the great inteſtines, and of courſe a conſtipation.

Of the Pulſe called Kong, and its Indications.

1. The ſecond of the pulſes, called Piao, is the Kong; it yields a ſenſation under the finger like that of a hole of a flute, leaving an empty ſpace between two extremities; this pulſe appearing at a time, and in places not agreeable to its nature, generally indicates a tenſion of the ſmall inteſtines, a conſtant deſire to make water, and yet making drop by drop with pain; however, theſe diſeaſes may he cured by proper medicines.

2. If this pulſe is perceived at the wriſt there is an obſtruction, ſtoppage, and perhaps a defluxion in the breaſt.

3. If the pulſe is found at the joints of the wriſt, it indicates an abſceſs in the inteſtines.

4. If it is found at the extremity of the Cubitus, there is an inanition in the kidneys, a ſharp blood is ſecreted by the urinary paſſages, or even thick purulent matter.

Of the Pulſe called Hoa, and its Indications.

1. If under the finger ſomewhat like a pearl be perceived in the places where the pulſe is commonly felt, and if when preſſing a little harder it ſinks without going backward or forward, this kind of pulſe is called ſlippery: when it is found at the three places uſually felt, the kidneys are diſordered, there is a tenſion in the ſmall inteſtines, a weakneſs in the whole body, and hot and cold fits by turns, the urine is ſharp and

reddiſh, all which proceeds from too much heat: The cure is performed by a mitigation of the heat, in which if you ſucceed theſe diſorders ceaſe.

2. This pulſe indicates frequent nauſeas, when it is only found at both wriſts.

3. The ſtomach is cold, and unable to digeſt the aliments, when it is the ſame at both joints.

4. When it is found at the extremity of the Cubitus, the belly in the umbilical region is as cold as ice, and in a condition which, according to the commentator, makes the patient thirſty, and yet he never drinks, but a grumbling is heard in the bowels.

Of the Pulſe called [*Che*] *full, and its Indications.*

1. The fourth of the external pulſes is ſaid to be full: It differs from the ſuperficial in that being preſſed hard it ſtill continues to be ſenſible, though it is more ſo when but ſlightly preſſed.

2. If this pulſe is found the ſame in the three uſual places of feeling it in each arm, it indicates violent internal heat, which cauſes inanition in the ſtomach and its orifice, and though the patient eats ſufficiently he ſtill feels a laſſitude and lowneſs of ſpirits; in this caſe he muſt uſe temperate cordials, which are neither too hot nor too cold.

5. There is an exceſs of heat in the breaſt, when this pulſe is found in the wriſt at improper times.

4. If it is found at the joints of the wriſt there is a pain in the hypochondria, and the ſecond of the three Tſiao, or ſtoves, is in diſorder.

5. If it is found at the extremity of the Cubitus, and feels under the finger like a cord, it indicates a ſwelling in the belly and a dyſury.

Of the Pulſe called [Hien] long and tremulous, and its Indications.

1. The fifth pulſe of the Piao, or external, is called long and tremulous: It has this in common with the ſuperficial, that when it is preſſed hard with the finger it is ſcarcely ſenſible, whereas when the finger is laid on gently it is as ſenſible as the reſt; but it differs from the merely ſuperficial in that there is obſerved in it every now and then a kind of inequality or trembling, much like that of the ſtrings of the inſtrument called Tſeng.

2. If at the three places where the pulſe in each arm is felt this ſort of pulſe is found, it indicates ſpontaneous ſweats, lowneſs of ſpirit, and forebodes a conſumption; the hands and the feet ſeem as if they were benumbed, and are ſometimes full of pain; the ſkin likewiſe feels dry: The indication of cure in this caſe is to maintain the natural heat in the Tan tien; [this, ſays the commentator, is three inches below the navel.]

3. There is a ſharp pain in the region of the breaſt, if this pulſe is found in the wriſts; the ſtomach is affected with cold, if it is found at the joints, and the natural heat of the loweſt ſtove [Tſiao] is as it were extinguiſhed by the waters which ſtagnate in the region of the abdomen.

Of the Pulſe [Kin,] ſhort and tremulous, and its Indications.

1. The ſixth part of the external [Piao] is called ſhort and tremulous, it is ſomething of the nature of the ſuperficial and overflowing; it has however this

proper to itſelf, that when the finger is preſſed hard it is ſtill ſenſibly felt, but in laying on the finger lightly there is a conſiderable acceleration perceived.

2. When in thoſe places, where the pulſe is uſually felt, it is found as has been deſcribed, there are malignant vapours put in motion by internal heat, and madneſs is near at hand; if it has not yet appeared it will ſoon diſcover itſelf by extravagant words, ſongs, and irregular motions, and unleſs a ſkilful phyſician be called in there is no hopes of a cure.

3. The head is only pained, if this pulſe is found no where but at the wriſts.

4. If it is only at the joints the pain is perceived, and increaſes, by degrees, at the region of the thorax.

5. If this pulſe is at the extremity of the Cubitus, the abdomen is pained, and ſo violently, that the patient keeps his hand there continually.

Of the overflowing Pulſe [*Hong,*] *and its Indications.*

1. The ſeventh and laſt of the pulſes, called Pia, external and more ſenſible, is the overflowing; it is always found to be very ſenſible though preſſed ever ſo hard, though it is more ſo when it is touched but gently.

2. When this pulſe is found at the three uſual places of the left arm, there is a ſuperficial heat throughout the body, dryneſs of the large inteſtines, conſtipation, thirſt, uneaſy pain throughout the body.

3. If this pulſe is predominant in the middle of the ſummer it indicates exceſs of heat, but not in the leaſt dangerous, for it will grow temperate of itſelf; but if it is in the middle of the autumn, or in winter, the diſtemper requires a remedy: the patient ought firſt of

all to have a ſweat, and then, after taking a laxative medicine, the exceſs of heat will ceaſe.

4. If this pulſe is only at the wriſts the exceſs of heat is in the upper parts, from the head to the breaſt.

5. If this pulſe is only at the joints, the ſtomach is overloaded, and a nauſea and vomiting ſucceeds.

6. If this pulſe is only at the extremity of the Cubitus, the heat is in the ſmall inteſtines, which is communicated to the kidneys; the urine is ſharp and reddiſh, and there is a great heavineſs in the legs.

Obſervations on the eight Pulſes called Li, more internal and leſs ſenſible.

Upon the Pulſe called [*Ouei,*] *ſmall, and its Indications.*

1. This pulſe is the firſt of the eight Li: It is diſtinguiſhed by preſſing moderately when the beating is diſcovered, but is very ſmall; then preſſing ſomewhat harder a ſecond time it is ſtill perceivable, but ſo ſmall, that it can hardly be called a pulſe.

2. The ſpirits are greatly exhauſted, if it is found in the three uſual places of each arm; and when it continues ſo long, it is followed by a ſimple gonorrhœa, the face becomes livid, and in a ſhort time the bones grow entirely dry.

3. A malignant humour attacks the head and the breaſt, if this pulſe is found at the wriſts.

4. No other part but the heart is attacked, if it is only at the joints.

5. If it is at the extremity of the Cubitus only, the malignat humour has its ſeat in the abdomen: The patient perceives a kind of ſhivering throughout the body, and there is a grumbling of the inteſtines when he drinks.

Of the deep Pulſe [Tchin,] and its Indications.

1. The ſecond of the eight pulſes, called Li, is deep or profound, and is known by this mark, that if you preſs very hard it becomes ſenſible, but ſlow and looſe like a piece of worn-out ſtuff; and if the finger does not preſs hard it is not perceived at all.

2. If this pulſe is found at the three uſual places in each arm, it is a ſign of a ſwelling or oppreſſion in the region of the arm-pits, and of cold at the extremities of the body; the noble parts are exhauſted, and the natural heat of the three ſtoves are not communicated as they ought, which occaſions obſtructions.

3. The breaſt is loaded with phlegm, when this pulſe is only at the wriſts.

4. If it is only at the joints, there is an oppreſſion, and a lively pain from the breaſt to the navel, with a great difficulty of breathing, which is ſometimes like to ſtifle the patient.

5. If this pulſe is only at the extremity of the Cubitus, there ſeems to be a weight in the loins and legs, and the urine ſometimes becomes thick, and ſometimes black.

Of the Pulſe [Ouan,] moderately ſlow, and its Indications.

1. The third of the internal pulſes called [Li,] leſs ſenſible, is the moderately ſlow: The only difference between this and the ſluggiſh lies in the degree; the ſlow pulſe generally indicates lowneſs of ſpirits and laſſitude, accompanied with anxiety, which ſhews that the motion of the ſpirits is not free.

2. When this pulſe is found at the three uſual pla-

ces of each arm, the kidneys are affected; there is a viſcous humour, and a malignant vapour extends itſelf to the head, and eſpecially to the ears, which then are troubled with a prodigious humming. The pains will ceaſe, if you make an aperture with a needle behind the head overagainſt the lower part of the brain, and repeat it thrice.

3. The joints are pained, if this pulſe is found at the wriſt.

4. There is a difficulty of ſtanding upright, if it is felt only at the joint of the wriſt, for the great pain renders the body crooked.

5. When it is found only at the extremity of the Cubitus, and is at the ſame time ſlow and inclinable to be ſmall, there is an obſtruction cauſed by cold humours, the patient's ſleep is diſturbed in the night-time, and he imagines himſelf tormented by ſpectres.

Of the Pulſe [Sæ,] ſharp, and its Indications.

1. This is the fourth of the eighth called [Li,] the more internal and leſs ſenſible: It is neceſſary to preſs hard to perceive it, and its motion has ſomething like that of a knife-blade ſcraping a bamboo. When this pulſe is found at improper times, if the patient be a man, it indicates a Virus; if it be a woman with child her fruit will be diſordered, and ſhe herſelf will be perhaps intirely carried off: If a woman not with child has this pulſe, it indicates a corruption infecting the maſs of blood.

2. The ſtomach is very weak, if this pulſe is only found at the wriſts.

3. The blood is ſpoiled, and unfit to nouriſh the noble parts, if it be at the joints of the wriſt.

4. If it be only at the extremity of the Cubitus,

there is a malignant ſweat over the whole body, and frequent dejections of the fæces.

Of the Pulſe [Tchi,] ſluggiſh, and its Indications.

1. This pulſe is the fifth of the eight Li, the more internal and leſs ſenſible; beſides that it requires preſſing hard to find it, its characteriſtic is a great ſlowneſs of motion, inſomuch that in a ſpace of inſpiration and expiration there are but three beats; this indicates a general inanition in the kidneys.

2. If this pulſe is inclinable to the following pulſe, called Flying downwards, the diſeaſe will not be eaſily cured; but if this is met with in the ſummer, it is ſtill worſe, and the diſeaſe is as it were incurable.

3. The heart is diſordered with cold, if this pulſe is found at the wriſts.

4. The belly is pained, and liquids do not paſs eaſily, if it is at the joints of the wriſt.

5. If it be at the extremity of the Cubitus, there is a coldneſs and weight in the loins and feet, and it is in vain to cover them, for they cannot be kept warm.

Of the Pulſe [Fou,] flying downwards, and its Indications.

1. This pulſe is the ſixth of the Li, and ſeems when felt to fly away and hide itſelf, becoming inſenſible for a moment; then if you preſs anew with the fingers, and ſtill harder, it is met with again, and does not vaniſh, but is low and deep; if it is found at the three uſual places it indicates occult poiſon and concealed malignity, the body is weakened, and the extremities are cold; there is an internal pain, and a ſecret poiſon diſturbs the temperament of the blood and ſpirits; in

whatever ſeaſon this is found it is neceſſary to procure a ſpeedy ſweat, and from thence to begin the cure of the diſeaſe.

2. There is an obſtruction in the breaſt, if this pulſe is only at the wriſt.

3. There is an obſtruction in the inteſtines, which affects the eyes, if it is found only at the joints of the wriſt.

EXPLANATION.

This is true, if it be at the joint of the left wriſt; but if it be at the right wriſt it is the ſtomach that is diſordered, and the diſeaſe called the piles ſoon follows.

THE TEXT.

4. If the pulſe is only met with at the extremity of the Cubitus, there is a want of digeſtion, and the patient cannot reſt ſitting or lying; it is beſides attended with a diarrhœa.

Of the Pulſe [*Siu,*] *moiſt or liquid, and its Indications.*

1. The ſeventh of the eight Li is moiſt or liquid, and ſeems like water preſſed under the finger. It is generally accompanied with troubleſome heat, a ſevere pain in the head, a great noiſe in the ears, and an external cold in the privities. All theſe troubleſome accidents proceed from things ſtill more troubleſome, the brain and the marrow of the back are dried up, and likewiſe the *Veſiculæ Seminales:* A malignant fermentation boils, if I may ſo ſpeak, the bones in *Balneo Mariæ*; the five Tſang are ſoon after diſordered, and death is not long in following.

2. The feet are ſubject to ſweat, if this pulſe is met with only at the wriſt.

3. If at the joints of the wriſts, the ſpirits fail, and there is a barrenneſs, or a diſpoſition thereto.

4. If at the extremity of the Cubitus it is at the ſame time ſlender like a hair, there is a malignant cold throughout the body; the fleſh and the bones are ready to ſeparate, and do not any longer ſupport each other.

Of the Pulſe [Yo,] *weak, and its Indications.*

1. This pulſe is the eighth of the Li, and is compared to the ſenſation cauſed by a bit of old cotton, having this common with the reſt, that after it is diſcovered, and is ſtrongly preſſed, it diſappears; beſides, its motion is ſlow, and commonly embarraſſed.

2. If it be found ſuch at the three places where it is uſually felt, it is a ſign of malignant and exceſſive ventoſities: If it be found in a young man, he will preſently die, and if in an old man he may be cured.

3. There is an inanition, if the pulſe is only at the wriſt.

4. There is a difficulty of reſpiration, if it be only at the joints of the wriſt.

5. The blood is ſpoiled, if it is only at the extremity of the Cubitus: There is an internal pain which is ſoon felt outwardly, and the patient generally dies of it.

Obſervations on the nine Pulſes called Tao, and their Indications.

REMARK.

Tao ſignifies, among other things, faſhion, manner,

road, &c. Perhaps the intention is here to examine the nine manners, or nine properties, which may be indifferently found in the more and leſs ſenſible pulſes.

THE TEXT.

The firſt of theſe nine pulſes is called [Tchang,] long; that is when the three fingers being applied to the three uſual places, it ſeems to be one continued pulſe, the pulſe of the extremity of the Cubitus paſſing beyond its uſual bounds, as alſo that of the joint: This pulſe in general indicates exceſſive heat and anxiety, both when ſleeping and waking. The poiſon or malignity of the heart is communicated to the noble parts, and ariſes from the intemperies of the three ſtoves; this ought to be diſſipated by ſweating.

The ſecond of theſe pulſes is called [Toan,] ſhort, that is when the three pulſes do not exactly fill their uſual places: This indicates inanition, whence proceed malignant ſhiverings, cold humours in the belly, which prevent the natural heat from ſpreading as it ought, and keeps it as it were in priſon, whence proceed very imperfect digeſtions; the method of cure is to evacuate theſe humours.

The third of theſe pulſes is called [Hiu,] empty, or exhauſted: This is when the fingers are preſſed hard or are laid on gently, the pulſe ſeems inſufficient, and as it were empty or exhauſted: It indicates great weakneſs, fears, fainting fits, a diſpoſition to be epileptick, eſpecially in children; but in whatever perſon it is found, if it is in the three uſual places, the blood cannot attain the neceſſary perfection for the nouriſhment of the internal and more eſſential parts of the body, which, wanting their neceſſary ſupport, undergo malignant and troubleſome fermentations. The

method of cure is to eſtabliſh, if it be poſſible, or at leaſt to ſuſtain the natural heat of the three ſtoves.

The fourth is the pulſe called [Tſou,] the confined: This is, when preſſed by the three fingers it ſeems in a hurry, but ſtops as it were at the wriſt in ſuch a manner that it omits, through precipitation, a ſingle beat, and then begins again: This pulſe preſages a dangerous event; if it changes ſoon for the better, the patient may recover; but if it continues in this condition death is at hand; at leaſt there is no human remedy to be found.

The fifth is the pulſe called [Kie,] embarraſſed: That is when the pulſe is moderately ſlow, fails in one beat, then returns again with an irregular impetuoſity, as if it could not have proceeded without ſtopping, if I may ſo ſpeak, to take breath, and diſentangle itſelf, it indicates an obſtruction in the region of the ſtomach, whence follows a weight and numbneſs of all the limbs, and frequently a ſevere cholick. An exceſs of heat in the three ſtoves occaſions this diſtemper; correct theſe intemperies gently, and the patient will ſoon be cured.

The ſixth is called Tai, which ſignifies ſucceſſion, change of generation, &c. This is when the pulſe is felt to be irregular under the fingers, and then ſuddenly riſes, and ſeems to move back inſtead of proceeding forward: When this is the caſe, the face becomes livid and ſickly, the patient is unable to ſpeak becauſe the vital ſpirits are almoſt entirely exhauſted; a malignant air has quite diſperſed them; the ſoul, adds the commentator, has no longer any place to lodge in.

The ſeventh is called [Lao,] hard; that is when it cannot be felt with a gentle preſſure, but is diſcovered afterwards by preſſing hard, but ſo irregular and indi-

ſtinct that it ſeems ſometimes to incline to the deep, and flying ſometimes to the full and long; ſometimes to the ſmall, but tremulous at the ſame time, always retaining a certain tenſion or hardneſs, which is its proper characteriſtick.

REMARK.

Sometimes this is called Ke, and is compared to the ſenſation which ariſes from the head of a drum when it is touched.

THE TEXT.

It indicates an internal plethora kept in by the troubleſome impreſſion of external cold on the outward parts, which were too much exhauſted to reſiſt it, whence proceed internal pains as in the bones: Soon after the ſkin changes colour, and a difficulty of breathing enſues; at length a continual oppreſſion in the breaſt, cauſed by the combat of the internal heat and external moiſture. All medicines in this caſe are to no purpoſe, and the patient will certainly die.

The eighth is the pulſe called [Tong,] moveable, not that it has any great motion, but becauſe it yields a ſenſation under the fingers ſomewhat reſembling that of ſmooth ſtones when they are felt under the water: This pulſe is not diſcovered but by preſſing hard, upon which it reſiſts the fingers a little, and when you repeat the feeling of it two or three times it ſeems to beat without preſſing forward, as if it was fixed in the ſame place: This indicates a weak exhauſted body; there enſues a flux and loſs of blood of long duration, eſpecially in women; and if the patient does not meet with a very ſkilful phyſician he falls into a conſumption of the lungs, and dies ſoon after.

The ninth is the pulſe [Sie,] fine, ſlender, which is when it ſeems under the fingers like a very fine hair: This ſhews an accidental cooling of the brain and ſpinal marrow: The body is feeble, and the legs ſeem to be aſleep; there ſometimes happens a troubleſome gonorrhœa of the ſimple kind; the face changes colour, and becomes meagre; the hair on the head and body decay and periſh; and this diſtemper begins towards the latter end of winter, which frequently diſappears in the following ſpring without any medicines being taken by the patient.

THE TEXT.

Every thing relating to the heart, the liver, and the left kidney, is examined from the pulſe of the wriſt, the joint, and the extremity of the Cubitus of the left arm: They examine what regards the lungs, ſtomach, and right kidney, or the gate of life, in the ſame places of the right arm, and in the ſame order.

This is the correſpondence of the five Tſang, and the ſix Fou: The heart, which is the firſt of the five Tſang, and the ſmall inteſtines of the ſix Fou, have a correſpondence with each other: There is alſo another between the liver one of the five Tſang, and the bladder of the liver one of the ſix Fou: Likewiſe between the ſtomach one of the five Tſang, and the ventricle one of the ſix Fou, to which it is contiguous: In like manner between the left kidney and the bladder, the right kidney and the three ſtoves, and between the lungs and large inteſtines.

The pulſe is generally felt in three places of each arm; at each of theſe places it may be diſtinguiſhed into ſuperficial, deep and mean, which yield nine different combinations in each arm; but the mean or

middle pulſe is that which ought to direct the judgment, with reſpect to the reſt.

He ſhould be in perfect calmneſs, both in body and mind, who feels the pulſe: He ought to be alſo very attentive, without allowing his thoughts to ſtray, and even the motion of the ſyſtole and diaſtole ought in himſelf to be regular and juſt; then applying the fingers gently to the ſkin, without preſſing, he is to examine what relates to the ſix Fou; then preſſing a little harder, but not ſo as to feel the bone, he is to examine if he finds the pulſe that he feels in a juſt moderation; then preſſing harder, ſo as to feel the bones of the arm, he muſt examine the pulſes of the five Tſang; afterwards he is to examine whether the pulſe has any intermiſſion or not, if it be quick or ſlow, and how often it beats in the ſpace of inſpiration and expiration.

If the pulſe beats fifty times ſucceſſively, without any interruption, this is health; if it ſtops before it has beaten fifty times, this is a diſeaſe; and the diſtemper is judged more or leſs dangerous, according to the number of beats before it ſtops.

If the pulſe ſtops at the end of forty beats, one of the five Tſang is ſpoiled: Thoſe to whom this happens very rarely live more than four years; if the pulſe ſtops after thirty beats, then three years is the longeſt period; if the pulſe ſtops at the end of twenty beats the patient cannot live more than two; but if it ſtops ſooner than this it is ſtill worſe, and is a ſign of a dangerous diſtemper.

But though in this laſt caſe there be great danger, yet it is ſometimes more and ſometimes leſs: For example, the patient generally dies in three or four days, if the pulſe ſtops after two beats; if the pulſe ſtops after three beats, the patient may live ſix or ſeven days, if the pulſe ſtops after three beats; and

the patient generally lives eight days, if the pulſe does not ſtop till after four ſucceſſive beats, and ſo of the reſt in proportion.

The prognoſticks of the pulſe are likewiſe founded upon its oppoſition to the preſent ſtate of the health of the perſon at the time of feeling; for inſtance, a man may feel no diſorder, and even appear to be ſtrong and healthy, and yet have the pulſe of a ſick perſon, that is ſuperficial, ſhort and tremulous, and according to the commentator be walking haſtily toward the grave: He adds, that in a ſhort time he will fall ſick, and very probably die.

Likewiſe if when the pulſe of a man who is really ſick is felt, you find it like that of a robuſt perſon ſtrong and overflowing, he will not live long.

Fat people commonly have the pulſe deep, and a little embarraſſed, but lean perſons on the contrary long and ſuperficial: In ſhort people it is confined, and, and as is were preſſed; but in tall people it is ſomewhat looſe.

Of the Diſtemper called Chang han.

REMARK.

Chang ſignifies to wound, to hurt; and Han, cold; as if one ſhould ſay a malignant and dangerous cold: This diſtemper is very frequent in China; it is a malignant fever, which they call Chang han in winter, and which has different names for the various ſeaſons of the year.

THE TEXT.

In this diſeaſe, notwithſtanding the name that it bears, the phyſician in feeling the pulſe, and in judging of its indications, ſhould follow the ſame rule as

in diſtempers occaſioned by heat: Thus in the diſeaſe called Chang han, the pulſe is at firſt ſuperficial, ſhort and tremulous, and becomes by degrees ſtrong and overflowing, and is perceived to be ſo in the three uſual places of feeling, it is a good ſign; the malignity ſeems ready to be diſſipated, and the patient is generally out of danger in ſeven days time.

But if on the contrary the pulſe is ſmall, ſlow, and yet a little friſking at times, and then as it were flying downwards, the patient is in a dangerous ſituation. When this is the caſe, there muſt be an exact knowledge gained of the hour and day that the diſtemper began, that its progreſs may be judged of by examining carefully the changes that happen to the pulſe, either with regard to its height or ſmallneſs, or to the ſwiftneſs or ſlowneſs of its motions.

Generally ſpeaking in the diſtemper Chang han, as in thoſe proceeding from heat, the pulſe ought to be high and overflowing; and when it is ſmall, ſlender, and almoſt imperceptible, all endeavours to recover the patient are in vain.

When after ſweating, which is to be procured at the beginning of the diſtemper, the pulſe becomes tranquil, and the fever abates, all goes well: But if after ſweating the heat and anxiety continue, and the pulſe is as irregular as before, there is not the leaſt hopes of his recovery.

There are diſeaſes (malignant fevers,) cauſed by a poiſon or malignant hot ferment in the blood; and there are others which proceed from a poiſon of a cold nature: Theſe are the different diagnoſticks and prognoſticks; the patient appears to be ſtrong, is troubled with unquiet, violent, and convulſive motions; the face becomes red, and red ſpots appear in other parts; the patient grows delirious, and while he is

ſo ſays many extravagant things, and ſometimes imagines he beholds ghoſts. Theſe accidents are commonly accompanied with a perpetual looſeneſs, and ſometimes with profuſe ſweats; the patient frequently opens his mouth in ſuch a ſurpriſing manner, that one would imagine he was juſt at the laſt gaſp. However dangerous his condition ſeems to be, let him not be given over, but make uſe of harmleſs medicines that are proper to his diſtemper; if he gets over the ſeventh day, there is no fear of his recovery.

There is a weight over the whole body, when the poiſon is of a cold nature; the back is ſtiff, the patient feels dreadful pains in his eyes and abdomen; the lips are of a duſky blue; the heart is ſeized with a malignant poiſon, which it cannot expel; the extremities of the body become cold; there is a nauſea, a diarrhœa, and rattling in the throat, and the pulſe is commonly deep and ſlender: The beſt thing that can be done in this dangerous extremity is to endeavour ſpeedily to maintain the natural heat three inches under the navel; if the patient gets over ſix days, he will preſently recover.

The Prognoſticks of ſeveral Diſeaſes by the Pulſe.

In the ſwelling of the belly, if the pulſe is high and ſtrong the diſtemper will diſappear, but if it be empty and ſmall the danger is great, and it requires much judgment and attention to make a ſucceſsful cure.

A ſmall pulſe is good in dyſenteries, but a ſtrong and overflowing one very bad.

A ſtrong and full pulſe is good in ravings and madneſs; but it is a very bad ſign, if it be found deep and ſlender in the three uſual places: It is beyond the ſkill of any phyſician to cure ſuch a diſtemper.

In the diſtemper called (Siao ko,) continual thirſt, the pulſe quick and ſtrong is good; but if it be ſmall and empty it is dangerous, and cannot be eaſily cured.

In the watry dropſy, when the pulſe is ſtrong and high, if the diſeaſe will not yield to medicines, yet the patient will live a good while; but if the pulſe is ſmall, and ſcarcely ſenſible, the patient will ſoon die.

After the accidents of the diſtemper called Kio loan, if the pulſe is ſmall and very ſlow there is a failure of the ſpirits, the patient is very low, and neither can nor will ſpeak a word. When this is the caſe, the diſtemper cannot be eaſily cured; on the contrary, if the pulſe is high and overflowing, the cure is eaſy, according to the experience of all ages.

EXPLANATION.

The diſtemper Kio loan is a confuſion, and a war between heat and cold in the inteſtines; this confuſion is occaſioned either by ſome irregularity in eating and drinking, ſuch as a debauch with wine, an exceſs of cold and raw food, or elſe a cold taken by ſleeping on the ground, and being expoſed to too great a wind, &c.

When the accidents of this diſeaſe begin by a pain at the heart, a vomiting ſoon after follows; when the pain firſt appears in the inteſtines, it is ſucceeded by a diarrhœa, and as the pain at the heart, and in the belly ſometimes begin together, then there follows a purging both upwards and downwards. The pulſe is very irregular, variable, and yet inclinable to that called the flying downward, during the time of theſe accidents and violent pains.

The moſt violent accidents being over, if the pulſe

is ſtrong and overflowing, the diſeaſe may be eaſily cured; but it is very dangerous, and difficult to cure, if it be ſlow, ſmall and ſlender.

THE TEXT.

A deep and ſlender pulſe is good in fluxes of blood, whether by the noſe or mouth: A high, ſtrong, and tremulous pulſe ſhews that the danger is great; but if it is hard withal, the patient will certainly die.

A deep and heavy pulſe is good in cardialgias and cholicks; but a high tremulous and ſtrong one is mortal.

EXPLANATION.

The cardialgias or cholicks may proceed from very different cauſes, and the above rule is not infallible.

THE TEXT.

There are various kinds of epilepſies, but it may be ſaid in general, that a ſlow and ſuperficial pulſe is proper to this diſtemper; a confined, full, ſtrong, and hurrying pulſe is a very bad ſign, eſpecially if the epilepſy is of this kind that the patient, whether he will or not, ſets his teeth ſtrongly together, and ſhuts his mouth; for when this laſt ſymptom is found complicated with the pulſe above mentioned, the three ſouls are deſtitute of help, and the patient will not live long.

There are epileptical perſons who are not troubled with this ſymptom, but on the contrary open their mouths, and emit their breath like a thick groſs vapour, their faces appearing as red as if coloured with

vermillion; theſe, though difficult to cure, may linger on for ſome time.

As for thoſe whoſe hair ſtands on end, and who frothe at the mouth, being unable to ſwallow any medicine; who are melancholy, diſconſolate, anxious, rattle in the throat, and make a noiſe like the moorhen, being alſo troubled with violent and convulſive motions, theſe perſons are incurable, eſpecially if beſides the preceding ſymptoms you obſerve that they have a blackiſh viſage, with the orb of the eye contracted, and the pupil enlarged, and if there happens a certain ſweat, which adhering to the hair of the body forms a kind of tenacious drop that will not run off; but it is worſt of all when theſe ſweats are oily, it is all in vain to lend ſuch patients aſſiſtance.

In a certain diſtemper, occaſioned by the abundance of internal plenitude of malignant humours, the body ſwells, and there is a tenſion and pain; at the region of the ſtomach there is perceived a hardneſs, ſtraitneſs, and dryneſs, accompanied with nauſeas and vomiting; at the ſame time there is felt a malignant and troubleſome heat in the hands and feet.

It is a bad ſign, if in this caſe the pulſe is deep and ſlender, and the patient generally dies, eſpecially when the ſtool and urine are ſharp.

In certain other diſtempers, cauſed by the abundance and external plenitude of humours, and by internal heat, there frequently happens a vomiting, which is no bad ſign; but if there is at the ſame time a diarrhœa, and the ſtools are very liquid, the diſtemper then is very great; and if the patient does not die, he will with great difficulty recover a good ſtate of health: But if with a vomiting and diarrhœa together you find a ſtrong and overflowing pulſe, all endeavours to cure the patient will be to no purpoſe.

In a certain dropſy, which is a ſuperficial ſwelling, occaſioned by a humour or riſing vapour that generally renders the breathing difficult, a pulſe ſuperficial and ſlippery is agreeable thereto: If it ſuddenly becomes ſmall and ſlender, the diſeaſe is mortal; you will employ your ſkill in vain, for the patient will not recover.

In a certain diſtemper, wherein the patient has a dry cough, makes bloody water, and is dry and very lean, if you find the pulſe ſtrong conſider well before you undertake the cure, for it will be very difficult.

In ſpitting of blood a deep and a weak pulſe is good, if you find it full and ſtrong it is mortal.

In an oppreſſion of the breaſt, cauſed by any intemperies whatſoever, the ſlippery pulſe is good; but there is no cure if it is ſharp.

In the diſtemper called Tchong ngo, wherein there is a ſudden ſwelling of the belly, the pulſe ſhort, tremulous and ſlender is good, but ſuperficial and ſtrong is very bad.

EXPLANATION.

According to the book called The Sources of Diſeaſes, the tchong ngo is when a man having a good conſtitution, and by a bad regimen and exceſſes becomes very weak, and from thence very ſuſceptible of foreign impreſſions, is ſtruck with ſome malignant impreſſion which makes his belly ſuddenly to ſwell, cauſes violent pains, and brings him to the point of death.

THE TEXT.

A ſlender and empty pulſe is good in wounds attended with great loſs of blood, but the full, ſtrong, quick one is bad.

When the pulſe is ſo ſhort and tremulous at the extremity of the Cubitus, and at the wriſt, that the beats are like the pricks of a bodkin, and the patient has fits of vomiting by intervals, the diſtemper ariſes from certain worms called Kou, and requires a ſpeedy remedy: Quickly make uſe of the moſt efficacious medicines, ſays one verſion; the life is in great danger: Another verſion ſays, if the pulſe is ſo quick that it is ſoft at the ſame time, the patient may be kept alive a good while longer.

EXPLANATION.

The book called The Sources of Diſeaſes ſays, in the compoſition of the character, which is read Kou, there are three Tchong, that is to ſay, three worms that are in the ſame veſſel Min, where they make war and feed upon each other; that which vanquiſhes the reſt is very dangerous, and gnaws the Viſcera of the patient; thoſe who are attacked with it have frequent cardialgias, and ſomething ſeems to gnaw them at the heart, the face frequently becomes bluiſh, and the eyes yellow, and ſeveral other extraordinary and irregular accidents of the ſame nature happen. This animal generally attacks the midriff firſt, whence enſues ſpitting or vomiting of blood; and if not prevented he will devour the Viſcera called Tſang and Fou, and occaſion death.

THE TEXT.

The pulſe ſtrong and overflowing in the attacks of poiſon is good, but it is dangerous if it is ſmall and ſlender, eſpecially if attended with vomiting of blood, for it is difficult to ſtop it perfectly, and death uſually enſues.

EXPLANATION.

The pulſe deep and ſlender is good in other vomitings of blood; there is none, but that occaſioned by poiſon, where the ſtrong and overflowing is thought to be good.

THE TEXT.

In ſhort, generally ſpeaking, to judge and pronounce more certainly, if the patient will die of his diſeaſe or not, there is nothing can be done better than to conſult the pulſe Tai chang; the patient will recover, if it is found to have motion and vigour; but if in this place the pulſe is languiſhing and ſtops, he will then die.

EXPLANATION.

This is an inch and a half diſtant from the joint of the great toe.

REMARK.

The Chineſe phyſicians at preſent never conſult the pulſe in this place, not even in men.

Prognoſticks taken from the Inſpection of the Patient.

It is a good ſign if the inward corner of the eyes of the patient be yellow, he commonly recovers.

If the eyes having been ſwelled ſuddenly fall, he will not live long; the five Tſang, ſays the commentator, are ſpoiled.

The diſtemper will not be eaſily cured, when you perceive a blackiſh colour ſpread itſelf over the eyes, ears and noſe of the patient; and if this colour reach-

es as far as the mouth, it is a hundred to one if he recovers; the ſtomach, ſays the commentator, is oppreſſed with the too great humidity of the kidneys.

When the face is yellow, the eyes violet or blackiſh, and the patient moves his arms in an unquiet and irregular manner, a malignant air has ſeized the ſtomach, and produced a mortal fermentation throughout the body; the ſtomach has oppreſſed the liver, ſays the commentator.

If the eyes are white when the face is blackiſh, the right kidney, called the Gate of Life, is quite ſpoiled, and the patient will die in about eight days.

When a patient's face is obſerved ſuddenly to change to a purple colour, and becomes by degrees more black, the liver and kidneys, ſays the commentator, no longer perform their functions.

The fate of the patient will be determined in ten days time, when the face becomes red and the eyes white, and there is at the ſame time a difficulty of breathing: If he gets over them ſafely he will recover; they are the lungs that ſuffer here, and the heat of the heart is too great, ſays the commentator.

It is a bad ſign when the eyes become inwardly yellow, black, or white, and this reaches as far as the noſe and mouth: The ſtomach, ſays the commentator, ſuffers from the moiſt intemperies of the liver.

The patient dies in about twelve hours time, when the mouth becomes yellow while the face is purple.

When the eyes are diſturbed, and the teeth break, and become black, or when the face becomes of a ſickly white, and the eyes turn black, theſe are all bad ſigns.

The patient will not live long, when he opens his mouth like certain fiſh, and cannot ſhut it again, and

the expiration is ſtrong while the inſpiration is very little.

When the patient's back is ſo ſtiff that he cannot move it, his eyes fixed and immoveable, looking only one way, and his lips dry and as it were parched, his viſage ſwelled, and at the ſame time bluiſh or black, the diſeaſe is very dangerous, and will not be eaſily cured: If there is alſo a delirium, unquiet and convulſive motions, followed with the loſs of ſpeech, and accompanied with a certain cadaverous ſmell, the patient will not live long.

When the patient perceives an entire repletion throughout the body, and his back becomes of a purple colour, he will die in three days: The ſtomach is oppreſſed by the intemperies of the liver, ſays the commentator.

The diſtemper is very dangerous, when the feet and legs fail under a man, and the knees are much ſwelled; the patient ſeldom lives over ten days.

The diſeaſe is mortal, when the joints loſe their motion, and become ſtubborn.

The patient cannot live long, when the lines in the palms of the hands are effaced.

The lips blackiſh, a cold ſenſation throughout the body, involuntary loſs of urine, averſion to every kind of nouriſhment, are not good ſigns: The patient will die in four days, if they meet at the ſame time.

It is a bad ſign, when the nails of the patient, both at hands and feet become of a purple colour, and afterwards black: The patient will die, if it remains for eight days, at leaſt he cannot be eaſily cured: The liver, ſays the commentator, is decayed.

When the patient perceives a weight in the loins, pain in the back, uneaſineſs throughout the body, the

diſeaſe is in the bones, and the patient will die in five days.

When a ſick perſon finds a great heavineſs throughout the body, and has red urine, if theſe ſymptoms continue, the diſeaſe lies in all the muſcles; the patient will not live above ſix days.

The patient will hardly paſs over nine days, when the nails of the fingers and toes become blackiſh, and he is fretful, finding fault with every one that comes, and the joints loſing their motion; but if the hairs ſtand on end, and become like hemp, he will die in half a day; in ſhort, when the patient ſeems to grope for his garments, and talks of death, it is in reality not far off.

Diagnoſticks and Prognoſticks of the Diſtempers of the five Tſang, independent of the Pulſe.

Of the Liver.

A weakneſs throughout the body, and eſpecially in the arms and legs, a remarkable dimneſs of ſight, tears falling continually, and without reaſon, the face ſwelled with blackiſh pimples, the tongue crooked, and of a purple colour; all theſe indicate the liver to be decayed, and the patient ſeldom lives over the eighth day.

The liver is diſordered with repletion, when there is a pain in the region of the arm-pits, the eyes are red, and there are frequent paſſions, vertigoes, and deafneſs: This viſcus muſt be unloaded by evacuations, and the cure may ſucceed.

A ſtiffneſs in the joints, and in the region of the arm-pits, dimneſs of ſight, fears, and ſighs without any evident cauſe, ſhew the liver to be diſordered thro'

inanition: If a cure is deſigned, the liver muſt be ſtrengthened.

Of the Heart.

The heart is oppreſſed, and is as it were ſuffocated with heat, when the face becomes yellow, but of a deep colour, and mixed with black, when there is a ſtiffneſs at the ſhoulders, the eyes fixed upon one place, the hands ſwelled, the lines of the hands effaced, and the talk extravagant, and without ceaſing; the patient ſeldom lives more than a day, when this is the caſe.

When the patient perceives a numbneſs and obtuſe pain in the back, and yet laughs without a cauſe, perceiving from time to time an extraordinary dryneſs in the tongue; all this indicates a bad repletion which diſorders the heart: Evacuations are neceſſary, and the phyſician ſhould be cautious that he is not deceived in attributing the diſeaſe to inanition.

The diſeaſe proceeds from inanition, if the patient is melancholy and troubled, eaſily frighted, and pale; if he perceives a ſtiffneſs at the root of the tongue, and a pain reaching from the loins to the back; Cordials and comforting things are neceſſary, when this is the caſe.

Of the Stomach.

The ſtomach of a patient is entirely ſpoiled, when the ſkin of the whole body is rough, the feet ſwelled, and the belly alſo at the umbilical region, and at the ſame time the face yellow and puffed up, the excrements coming away involuntarily, and the poſition of the lips are changed: When the patient is in this condition, he will not live above twelve days.

When there is a ſwelling in the body, accompanied

with a conſtipation, a palſy in the feet, a heavineſs throughout the body, when the patient eats much without being refreſhed; all this ſhews a ſtomach diſordered by a vitious plenitude, and makes evacuation neceſſary.

But the ſtomach is weak, and ſtands in need of ſtrengthening medicines, when a ſwelling of the body is attended with a motion of the entrails, vomiting, continual indigeſtion, and a looſeneſs.

Of the Lungs.

The lungs are entirely decayed, when the ſkin, hair, and nails are become dry, when the expiration is great, and very little inſpiration, and when the lips are decayed, and the lines of them diſappear, they becoming black, and like a half-burnt match: When this is the patient's caſe, he will not live long.

When the back, ſhoulders, and thighs are pained, and there is a cough, a difficulty of breathing, and windineſs making its way upwards, then the lungs are affected with a bad plenitude, and it will be neceſſary to relieve them by evacuations as ſoon as poſſible, for all delays are dangerous.

When the reſpiration is weak, the voice ſmall, attended with fits of coughing, and the ſpittle is mixed with blood, there is a great weakneſs and oppreſſion, and it will be neceſſary to ſupport and ſtrengthen them before any method is uſed.

Of the Kidneys.

The kidneys are abſolutely decayed, when the patient's face becomes black, the teeth ake, the ſight grows dim, when there are ſpontaneous and plentiful

ſweats with a ſhooting in the loins, when the ſkin is always moiſt, and the hair at the ſame time becoming dry: The patient will die in four days, when he is thus affected.

When there is a puffing up of the belly, a weight throughout the body, extraordinary ſweating at meals, or immediately after, when the patient is very ſenſible of the leaſt air, and the face and eyes become black and livid, when he has no mind to ſpeak, and when he does ſpeak, in a languiſhing manner; this ſhews that the kidneys are oppreſſed with a bad plenitude, therefore empty them as ſoon as poſſible.

When the patient feels extreme cold in the hypochondria, and a pain down the back, when there is at firſt a noiſe in the ears, and then a kind of deafneſs, when the urine is much altered, either in quantity or quality, they ought to be ſtrengthened, for they very much require it.

Of pregnant Women.

A woman is with child, though not to outward appearance, when the pulſe of the wriſt is ſmall, that of the joint ſlippery, that of the extremity of the Cubitus quick, and they remain ſo for a time, and without any other variation than what may be diſcovered at ſome intervals, when a few beats ſeem like the pecking of a bird that is feeding.

If the pulſe is ſlippery and quick when you preſs your fingers gently upon it, and then if preſſing more ſtrongly it ſeems to be ſmall, the woman is three months gone.

She is five months gone when the pulſe is found to be ſlippery and quick: If it be in the right hand, the woman is big of a daughter; this is ſpoken of the pulſe of the wriſt, and this diſtinction of the right and left

hand ought to be applied to the ſlippery pulſe of the joint before mentioned: As for that at the extremity of the Cubitus, it is ſufficient to mind that there be no interruptions in its beats; this circumſtance, joined to that which was ſaid of the pulſes of the wriſt and joint, indicate being with child.

When the woman is four months gone, you may diſtinguiſh many ways whether ſhe is pregnant of a boy or a girl.

1. The woman is big with a ſon, if the pulſe is quick in the left hand; but with a daughter, if quick in the right hand.

2. She is big with a ſon, if the pulſe is deep but full in the left hand; with a daughter, if the pulſe is ſtrong and ſuperficial in the left hand; and ſhe will have two boys, if the pulſe is deep but full in both hands.

When a woman, who is with child, is gone her full time, and has a wandering pulſe, and perceives pain in her belly and loins at the ſame time, ſhe will be delivered in twelve hours. Some of the Chineſe phyſicians ſay that there are three beats in the ſpace of one inſpiration: Others affirm that it beats but once during an inſpiration, and pretend that this happens when the pulſe is at the ſame time deep, ſlender, and ſlippery.

When a woman in labour feels an uncommon heavineſs, and has ſometimes a ſhivering, ſometimes heat, and the under part of the tongue is hot, the upper part being cold, the infant is dead or dying, and the mother will die alſo without being delivered.

If the face of the woman in labour becomes red, and her tongue purple, ſhe generally is delivered of a dead child; and ſhe will alſo die, when there is froth at her mouth, and her lips and mouth are purple.

The mother will die, and the child live, when the face is purple, and the tongue red, and ſhe frothes much at the mouth.

It is a good ſign when a woman newly delivered has a ſlippery and moderate ſlow pulſe; but ſhe will not live long, if it is full, ſtrong, tremulous, and cloſe. If the pulſe be ſmall and deep, it is good; but it is bad, if hard and firm.

She will die, if the pulſe is all in a flame, irregular, and very quick; but will recover, if the pulſe is deep and ſlender, and continues ſtill ſenſible, after preſſing with the fingers ſo as to feel the bone.

FINIS.